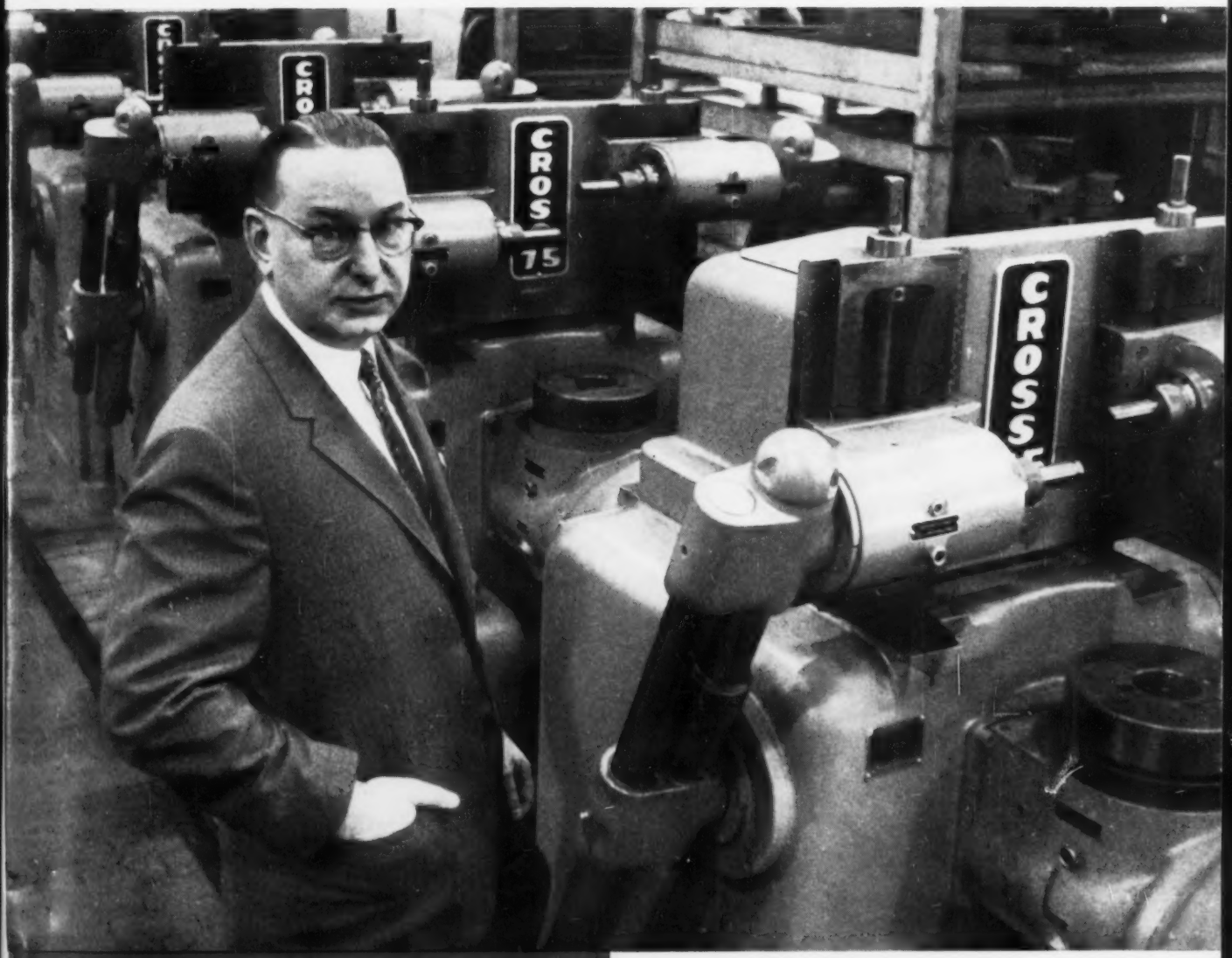
The IRON AGE

June 25, 1959 A Chilton Publication The National Metalworking Weekly



Cross Co.'s Ralph E. Cross

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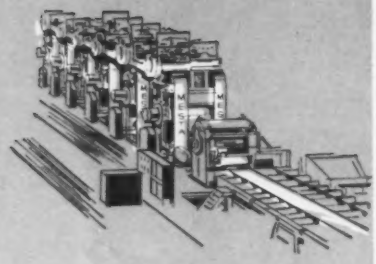
What Workers Expect From Their Foreman – P. 51

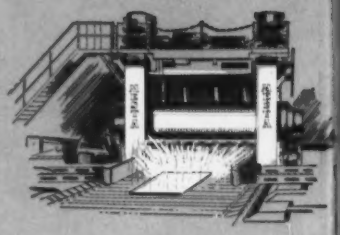
How to Keep Machine Tools in Shape – P. 91

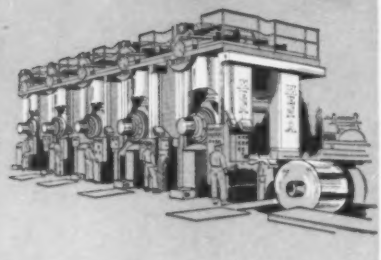
Digest of the Week – P. 2-3

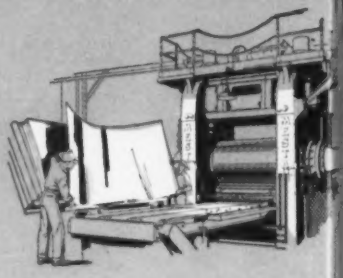
MESTA ROLLS

for Quality and Tonnage....



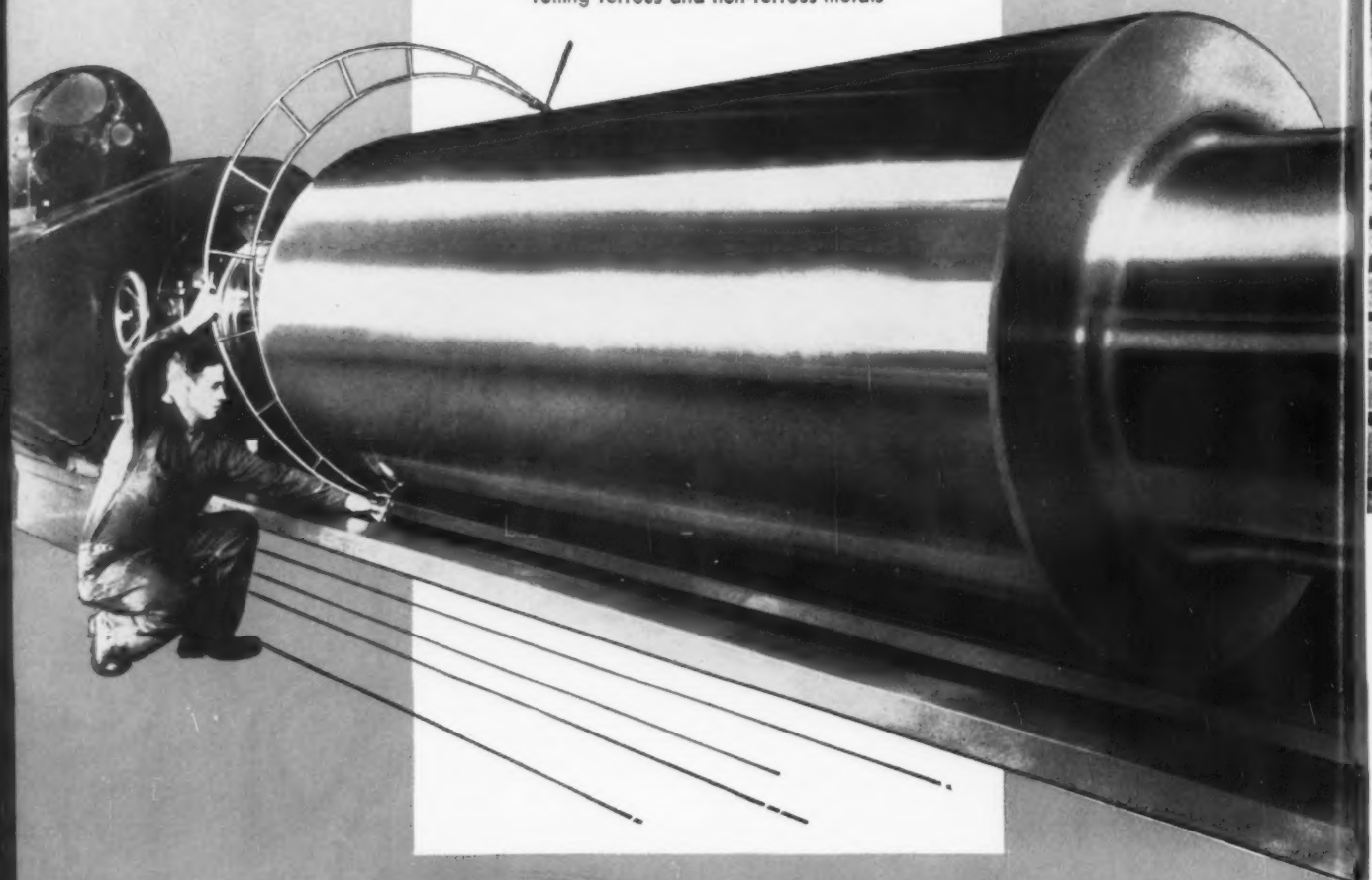






MESTA HEAT TREATED SPECIAL ALLOY CAST STEEL BACKING-UP ROLLS

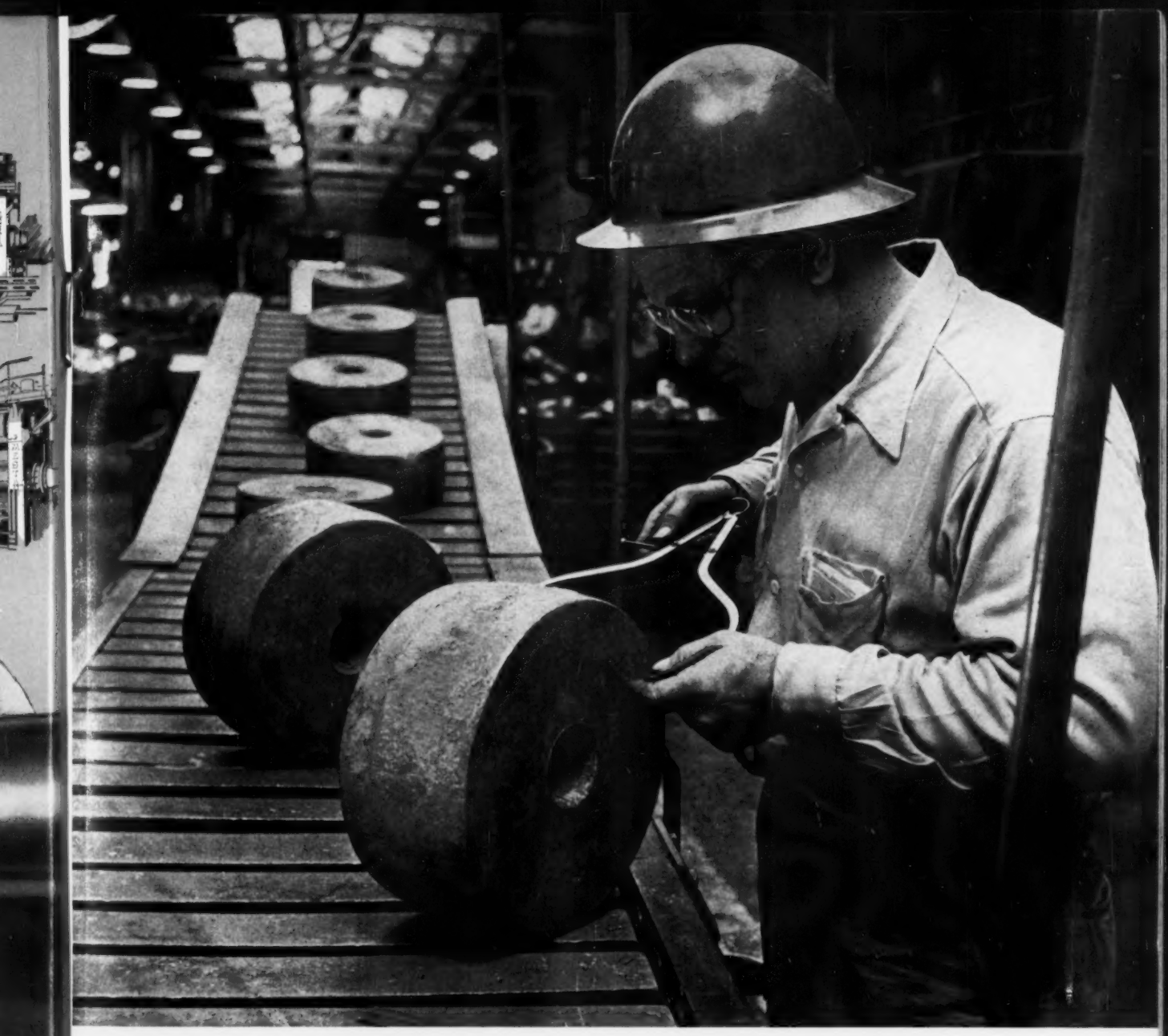
for Hot Strip Mills, Plate Mills,
Tandem Cold Mills and Temper Mills
rolling ferrous and non-ferrous metals



Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA



How Drop Forgings Cured the Customer's Trouble

Disturbing reports from the field convinced a large manufacturer that something was wrong with the pinion gears he was making. Expensive machinery built in his plants was giving trouble—all because of those pinions. A research engineer quickly spotted the cause: the pinion gears were not of the forged type, and lacked the stamina for heavy-duty work.

"Get drop-forged pinions," he advised. "Try Bethlehem. They know how to make a good gear blank."

His boss accepted the recommendation. Bethlehem got a trial order—then a second, then a third. Now it's no longer on a trial basis. Bethlehem drop-forges the blanks whenever a new lot is needed.

The customer? He's mighty well pleased. His pinion-gear troubles have disappeared.

We suggest you call on Bethlehem for any job that can be handled by drop-forging methods. We are equipped to produce an infinite number of designs, in weights ranging from 1 to 250 lb.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

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The IRON AGE

June 25, 1959—Vol. 183, No. 26

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*Starred items are digested at right.

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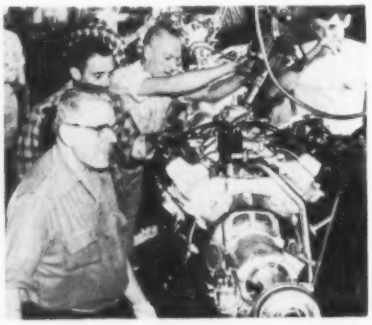
FOREMAN APPRAISAL

Workers' Viewpoint — It might come as a surprise, but worker job



wants are similar to the foreman's own. Here is a guide that can help foremen do a better job. P. 51

STEEL LABOR TALKS

A Peaceful Settlement? — Bargaining atmosphere in steel labor negotiations has improved greatly as talks enter the home stretch. Only last-minute haggling could upset the apple cart. P. 53

DIRECT ORE REDUCTION

New Republic Process — The company has produced strip directly from ore without melting. Laboratory samples of new product pass rigid stamping test. Commercial production may be 6 years away. P. 54

LOOKING FOR A TAX CUT?

Chances Are Slim—Administration brass is talking about an elec-

Metalworking

NEED FOR TECHNOLOGY: Ralph E. Cross, executive vice president, Cross Co., explains why gains in technology are the only sure way to full employment and a continued high standard of living. P. 65

tion year tax reduction. But defense and domestic spending outlook offers scant hope for taxpayer. P. 73

RUSSIAN AUTOMATION

Making Headway—This will be a big year for automation in Russia. Study has been completed on automatic equipment for making double gears, spiral bevel gears, stepped shafts, and carburetors. P. 77

FEATURE ARTICLES

MACHINE REBUILDING

How to Make Choice—The best way to find whether or not a machine is faulty is to check its performance against original performance specs. The question as to whether the unit should be repaired, rebuilt, or replaced depends on relative costs and performance compared with new units. P. 91

DOUBLE CHROMIUM PLATE

For Lasting Protection—A new duplex plating is a natural for automotive trim and hard-to-protect zinc-base die castings. Consisting of both cracked and crack-free coatings, the new plating increases corrosion resistance 500 pct. P. 96

REMOVABLE PUNCHES

Retainer Cuts Costs — A new concept of removable-type punches and retainers cuts costs in die manufacturing and maintenance. Key feature is a retainer that requires no devices built into it to hold the punch. P. 100

BUTTON-HEAD WELD

Uniform Quality—A new welding attachment in the form of a light-weight gun turns out fast uniform rivet-like welds. Wide application is expected in the welding of metals from 0.035 to 0.187 in. thick. P. 102

CARBURIZING CONTROLS

Improve Quality—The dew point method of carburizing control again proves its merit. A leading manufacturer of trucks points up the advantages of its new carburizing furnace setup. P. 104

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Industry Loses—The Dept. of Commerce needs an aggressive spokesman to press industry's position in the Administration. Adm. Strauss's departure leaves a gap that will be hard to fill. P. 63

AUTO PARTS DESIGN

Help From Metallurgy—In designing parts, engineers should consider economy as great a factor as strength. A metallurgist can offer valuable assistance in lowering material costs. P. 69

BOOM IN HAWAII

Statehood a Primer — Business barometers are hitting a new high in Hawaii. Construction and tourist income show fastest growth. Statehood is expected to assure long-term economic expansion. P. 75

IF THERE'S NO STRIKE

Here's Steel Market Outlook—If the steel labor dispute is settled without a strike, here's a rundown on the availability or non-availability of various steel products in third quarter. P. 121

BUYER'S PLIGHT

Not Enough—Despite their efforts to rebuild inventories, most PA's at the annual NAPA meeting said they are still vulnerable to a steel strike. P. 122

NEXT WEEK

MECHANICAL FASTENERS

How to Save—The selection and use of industrial fasteners are two of the biggest areas for cost saving in metalworking. Next week's technical feature will be a valuable guide for management to follow in setting up a workable system.

Get new-forging performance at 1/3 the cost from ERIE FOUNDRY REBUILDING SERVICE

Here at the Erie Foundry Rebuilding "Hospital", we disassemble and inspect your forging hammer, remachine worn surfaces, true bearings, replace broken parts, repair cracked parts. Once the hammer is reassembled, tested and put back in operation, it'll be as spry and sound as a new machine—but at one-third the cost!

Stands to reason that the leaders in forge manufacture for over 60 years should be the best source for forge repair.

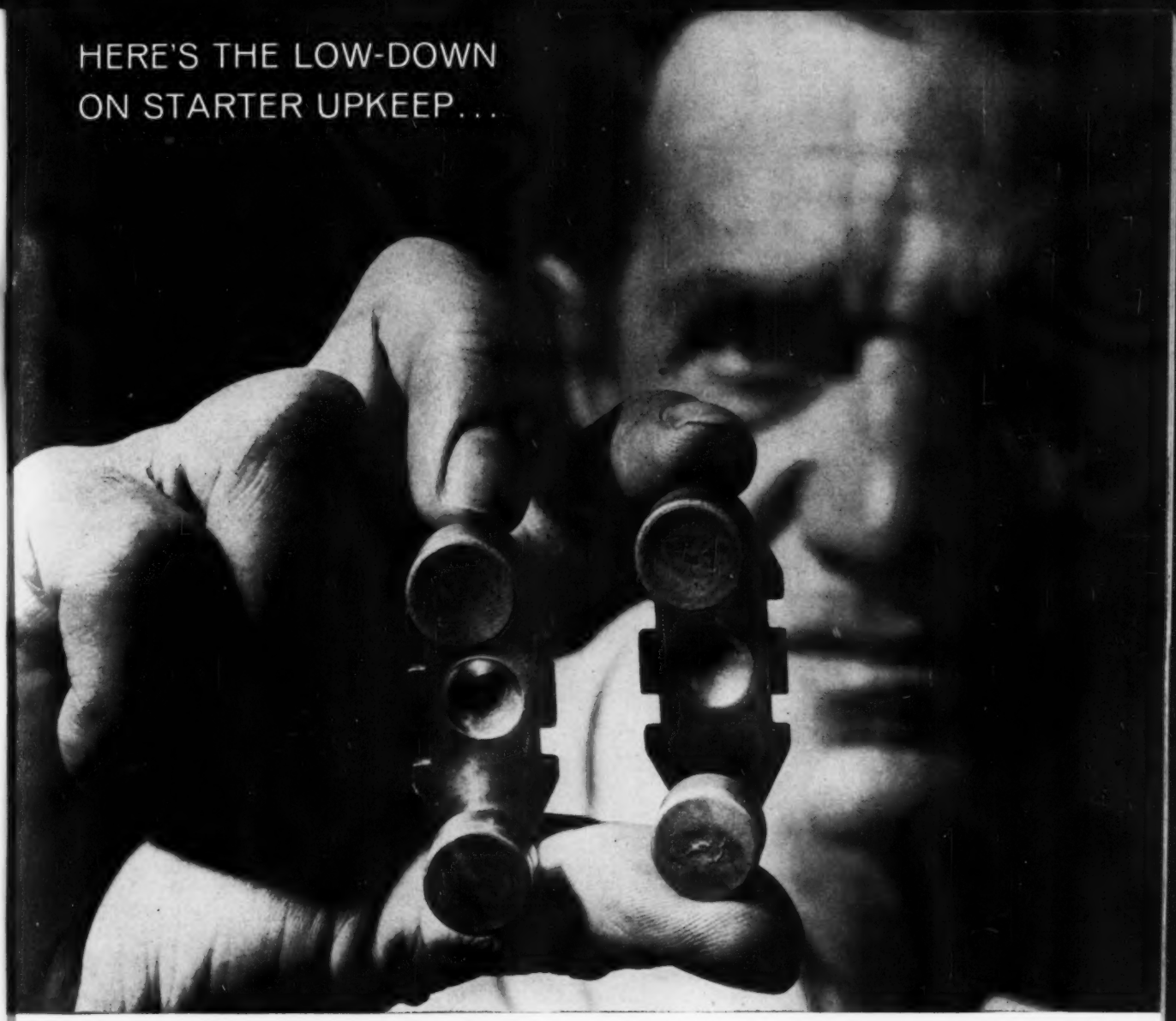
Regardless of who made it, or how badly it's cracked, broken or worn, your forging hammer will recover most quickly at Erie Foundry's Rebuilding "Hospital". Write for the complete story.

ERIE

THE WORLD'S GREATEST NAME IN FORGING SINCE 1895

ERIE FOUNDRY CO.

ERIE 1, PA. EF-59-02



Contact tips hold up "like new" after one year's service to keep your maintenance down

The unretouched photograph above shows two sets of contact tips from a Clark Type "CY" A-C Motor Starter. One set has seen a year of continuous hard service with frequently as many as 5,000 operations per hour. The other set is brand new – unused.

Which contact tips were actually in service for one year? The obvious, but not too obvious clue is the slight discoloration and minute pitting in the tips at right above.

But you can easily see for yourself that even after one year of steady operation these tips show very little evidence of wear. Their present condition will assure many more years of dependable service, free of maintenance.

The secret? Clark's exclusive "arc quenching" principle incorporating the use of strong, multi-turn magnetic blow-outs and double-break contacts.

The action of the magnetic field not only forces the arc to rotate, moving it continually over contact surfaces, but tends to "quench" it at the same time. Result: Less wear on contact tips and fewer maintenance headaches.

There are many more good reasons why the Clark Type "CY" Starter is your best *preventive* maintenance buy. For complete details contact your nearest Clark Controller sales office or distributor. Or, write direct. 931

The **CLARK CONTROLLER** *Company*

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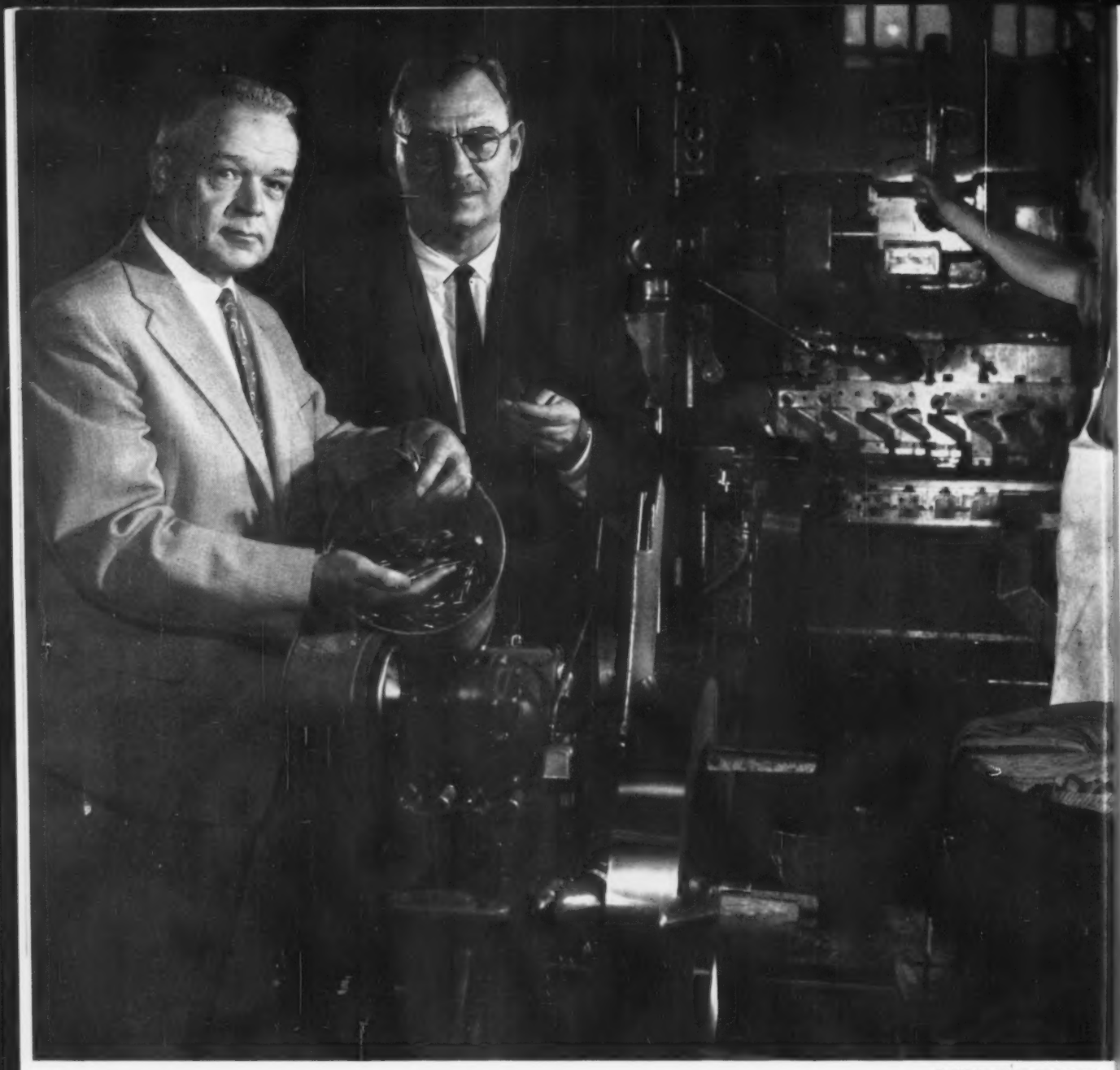


PHOTO BY KARSH OF OTTAWA

"Steel quality is vital to Shu-Lok— Sharon has the quality we want"

—CARL M. JOSLYN, plant manager, Shu-Lok Fastener Division, Talon, Inc.

"The Shu-Lok is a product of precision—yet it must be able to absorb the exceptional punishment of holding active boys' shoes intact indefinitely. Further, it is an assembly of small stampings. It is imperative from a production standpoint that we have the finest steel possible," says Carl M. Joslyn, plant manager of the Shu-Lok Fastener Division of Talon, Inc., shown above (left) with Shu-Lok sales manager David Dibbell.

"Rejected fasteners result not only in material loss, but an uncommon amount of assembly time is wasted. Precision, strength, consistent analysis—reasons why we use stainless steel and buy quality from *Sharon Steel Corporation, Sharon, Pa.*"

SHARONSTEEL **SHARON** *Quality* **STEEL**

Pat Public Positions Make Face-Saving Difficult

Next week steel labor and management negotiators will go down to the wire. Just short of the deadline, some attempt will be made to reach an agreement. It has always been thus.

But it may be a little harder to do this time. Both steel management and the union have taken strong public positions. Also, just at the time it was assumed collective bargaining could go on, President Eisenhower came into the picture.

The President took a strong position. He demanded a non-inflationary pact. This was deemed to mean an agreement which called for no steel price increase.

Some of the President's advisers also took strong public positions. They said, in effect, that the union must not get a wage increase because it would be a pattern for other industries and thus would be inflationary.

Other top Administration officials "off the record" agreed that the union could have a non-inflationary increase based on "productivity." Still other government sources said there would be an agreement without a strike and that it would be non-inflationary.

All the while these "outside" positions were being taken, the union was taking one of its own. It said there would be a big wage package but later inferred a moderate wage settlement would be acceptable.

The steel management side remained in its frozen position except that it proposed to bargain downward on things it felt were not correct working procedures or practices. The union's answer to this was, of course, a "No."

It goes without saying that if the Administration had kept out of this steel labor hassle it might have been easier for both sides to negotiate a contract in time to head off a walkout. But there have been so many "positions" and there is so much "face" to save it will need give and take by everyone to avert a walkout.

There is still a chance that all faces can and will be saved by a non-inflationary settlement that would postpone a real knock-down and drag-out fight over future inflation.

At least for the time being, faces would be saved and firm positions abandoned in sweet reasonableness.

If this is not the case, then there will be hell to pay.

Tom Campbell

Editor-in-Chief

CASE HISTORIES

Exclusive Sentri-Seals effectively seal out foreign materials at temps up to 225° F for extended periods — up to 350° F for shorter periods. Made of Buna-N, they are compatible with silicone, petroleum and diester lubricants.

Photo courtesy: Thor Power Tool Company

Bearings Seal Out Abrasives...Allow Cool Operation In 21,600 R.P.M. Grinder!

CUSTOMER PROBLEM:
Tool manufacturer requires bearing design that will seal 21,600 r.p.m. grinder from abrasives . . . yet heat must be minimized for operator comfort since tool is hand held.

SOLUTION:
N/D Sales Engineer recommended a group of four New Departure integrally enclosed bearings . . . some with Sentri-Seals. These precision ball bearings successfully shut out microscopic grinding abrasives. And, even with such positive sealing, the virtually friction-free New Departures help keep the temperature low enough for comfortable hand operation. They're sealed and lubricated for life . . . promising trouble-free ball bearing performance without the added burden of periodic maintenance.

For immediate analysis of your current ball bearing problems, call the New Departure Sales Engineer in your area or write Dept. S-6.

Replacement ball bearings available through United Motors System and its Independent Bearing Distributors

NEW DEPARTURE
DIVISION OF GENERAL MOTORS, BRISTOL, CONN.
NOTHING ROLLS LIKE A BALL

Stainless-Clad Mufflers

Research promises a new stainless-type coating designed to lengthen the service life of mild steel in automotive mufflers. The surface coat is applied to all surfaces by dipping. It's then fusion bonded to the bare metal in a furnace using conventional atmospheres. The resulting overlay has excellent resistance to oxidation, corrosion and abrasion.

Checks Bevel Gear Blanks

A new inspection unit eliminates the crown or outer diameter of bevel gear blanks as a point of reference. Only the face angle and back angle are used. With no need for special checking fixtures on each job, the machine uses the same arbor equipment as gear cutting machinery.

Bid for College Graduates

Federal agencies will have to bid high to attract many top college graduates this year. Industry starting salaries are as much as $40 a month above 1957 levels. Engineering graduates are to get $490 to $510 per month to start. An estimated 90 pct of them had jobs waiting upon graduation. Business administration graduates, about 75 pct placed before graduation, can expect up to $420 a month in starting pay.

Huge Vacuum Furnace

Proposals are being received, it's reported, for a 90-in. vacuum melting furnace. This would be the industry's largest. It's expected that one of the big problems will be providing a power source to handle a unit of this size.

Stress Reliability Tests

Reason many smaller manufacturers fail as suppliers of military hardware is lack of understanding of reliability requirements, industry and government spokesmen report at a recent space-age meeting. For example, a deficiency in an electronic tube traced to inadequate tests on manufacturing changes caused 60 pct of an 11,000-unit shipment to be called back. This costly error will probably wipe out 1st quarter profits of supplier and put him on the spot with prime contractor and the Defense Dept.

Urethane Foam for Tires

Airless automobile tires, filled with a special urethane foam, may help automakers in their attempt to do away with the spare tire. Test units recently passed severe testing. To date, other methods—such as self-sealing, two compartment, or steel cord tires—have not proved to be entirely satisfactory substitutes for the spare tire.

A Switch to Lockbolts

In its destroyer repair program the Navy has adopted stainless lockbolts to replace rivets for critical structural areas. Reason reported for switch in specs is increased shear strength and greater rigidity with more resistance to galvanic corrosion. Shear strength of the stainless fasteners rates at 70,000 psi.

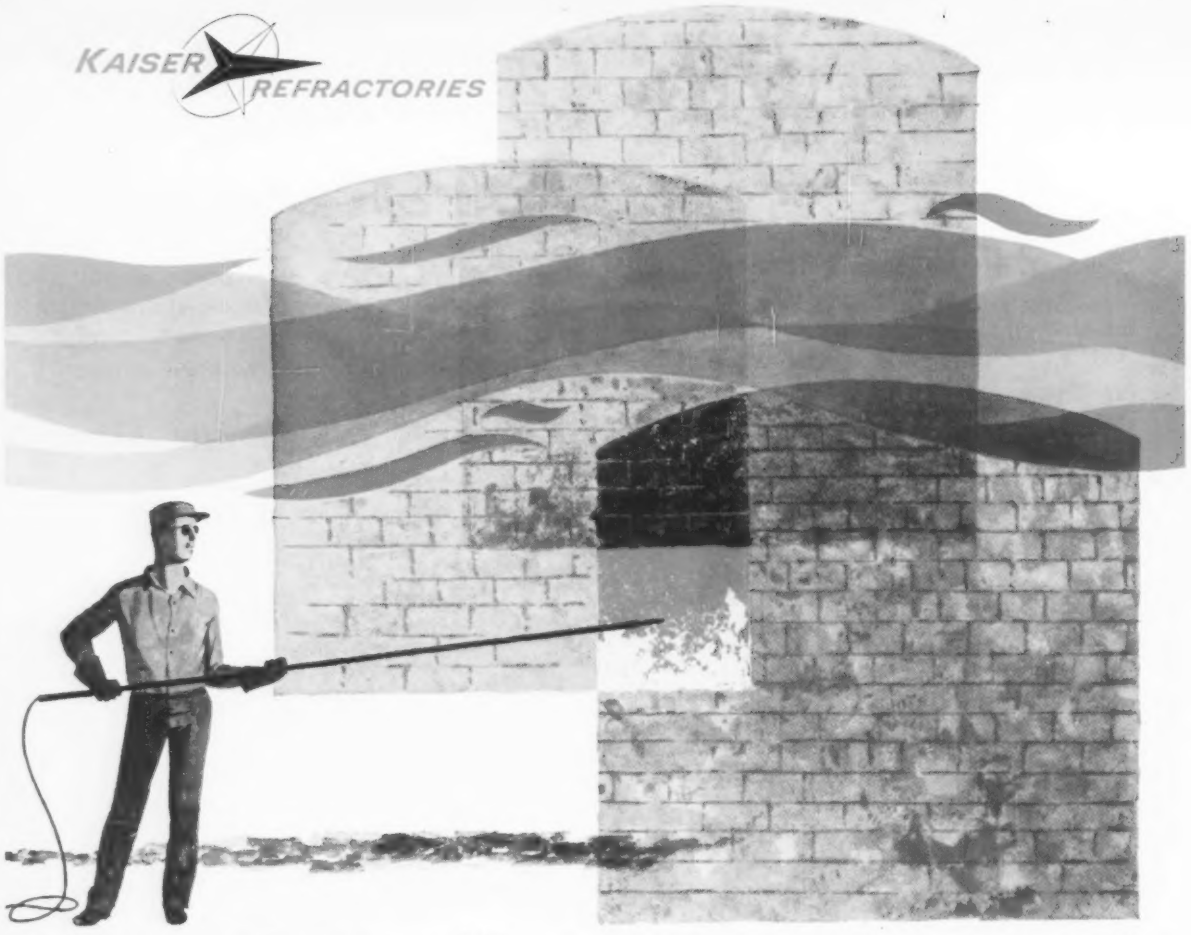
Test Nylon Casting Method

Service tests are being conducted on large nylon machine parts made by a new casting method suitable for mass production. The parts, such as gears and rollers up to a size of 2 ft, are reported to have greater density than parts produced by other methods. It's a centrifugal casting method that results in improved strength and longer service life for finished parts. Tooling costs are said to be a fraction of those for conventional molding methods.

Antitrust Group on Watch

The Senate Antitrust Subcommittee is keeping a close eye on current steel wage negotiations. Sen. Kefauver's group is ready to spring into action if there's the slightest excuse for another round of hearings after settlement. Steel industry and union officials will be called to Washington to explain how settlement and any price boosts were determined if steel prices are forced up.

KAISER REFRACTORIES



3 Campaigns with open hearth endwalls of Kaiser Periclase Chrome Brick!

• "Took off #6 Open Hearth and found Kaiser Periclase Chrome Brick looked so good in the endwalls that they were left in for the third campaign."

• "After two campaigns of 90 and 106 heats, Brand 'A' were removed from the down-river end and Kaiser Periclase Chrome Brick are going to complete a third campaign in the up-river end."

• "Furnace this month finished third campaign of 176 heats, and at that time Kaiser Periclase Chrome endwall had gone through 562 heats. At this writing, this endwall has approximately 600 heats . . ."

Every month reports like these bring more and more dramatic evidence of improved endwall service. And more often than not, these reports show how *new shop records* have been established with Kaiser Periclase Chrome Brick. Here are the properties that make possible such performance:

1. Volume Stability. Chromite content is the minimum amount necessary to provide resistance to thermal shock. Lowering of chromite also reduces swelling in presence of iron oxide, thus minimizes buckling and peeling.

2. Uniform High Strength because ceramic bond is formed *before* the chemical bond burns out.

3. Outstanding Resistance to Distortion and Shrinkage because there is no liquid phase in the conversion from chemical to ceramic bond.

4. Excellent Resistance to Chemical Attack by furnace fumes, iron oxides and slags is assured by high magnesium content, maximum brick density (low porosity) and chemically stable composition.

Make a comparison test and see how much more life you get with Kaiser Periclase Chrome Brick. Your Kaiser Refractories Sales Engineer will be glad to help.

Call or write Kaiser Chemicals Division, Dept. S9141, Kaiser Aluminum & Chemical Sales, Inc., at any of the regional offices listed below:

PITTSBURGH 22, PA. . . . . 3 Gateway Center
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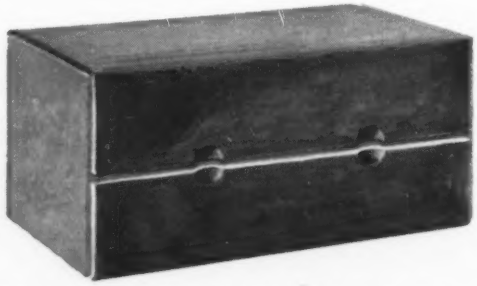
OAKLAND 12, CALIF. . . . . 1924 Broadway



Refractory Brick & Ramming Materials • K/R Gunning Systems
Castables & Mortars • Magnesite • Periclase • Deadburned Dolomite • Aluminas

A Challenge

Sir—I was formerly general superintendent of blast furnaces and assistant general manager for the manufacturers of the famous "Salisbury Chilled Iron," and am writing to learn if you will publish, if interested, a challenge to the entire iron industry of America, then sit back and see the fun.

It is this: No other iron yet made could equal it for uniformity and depth of chill. It exceeded any other iron in tensile strength by 2½ tons per square inch; also, would outwear manganese steel by 20 times.

Also, the manufacturer of this iron at our plant or subsidiary in East Canaan was the only blast furnace ever to operate with no waste.

The iron was sold at a handsome profit, all slag was sold likewise, at a rate of 20 carloads per day, all screenings and fines from the fuel were sold for ⅓ more than we paid for the fuel, the cadmium taken off the furnace turnings twice each year was sold at a profit of $80 per ton.

In addition to this, we discontinued all use of fire clays and substituted our own composition which gave us 10 to 12 months' longer run on a furnace without relining.

Is there a single blast furnace outfit in America that can equal this record or beat it? No, sir, I think not. If there is, we would like to hear from them.—W. Wallace, Canaan, Conn.

▪ There is your challenge, dear reader. And we say "let the fines fall where they may!"—Ed.

Meat Axe

Sir—Congratulations on your excellent editorial in the June 4 issue entitled "Let's Use the Meat Axe on Government Spending." I hope it will stimulate some action before it is too late.

The sad truth of the matter is that as a nation we have lost our sense of values—political, moral, and economic—while other major nations in the world have not.

We no longer place great value on insisting that the best possible candidates are brought forward and elected to high Government offices. Morally, we sit back and watch the United States Senate, in all of its majesty, unable to do anything about the thugs and racketeers who take refuge under the Fifth Amendment. Economically, we know that when the productive component of any economy can no longer support the unproductive, parasitic component, something has to happen—and yet we do nothing about it.

One simple action that would go a long way to restore our sense of political, moral and economic values would be to have legislation that would make it mandatory for the Government to reduce the national debt each year by an amount equal to a certain percentage—say 3 pct—of the Government income for that year. From the time of the Roman Empire, however, history offers little hope that anything like this will be done until it is too late, and the "Meat Axe" approach will certainly be necessary then.—R. H. Thielemann, Palo Alto, Calif.

Finishing Handbook

Sir—Could we possibly obtain two copies of the special article "New Handbook on Metal Finishing" from the June 4 issue of IRON AGE? These would be placed in our company Library for reference by our trainees. May we take this opportunity to thank you for your ready compliance to the several requests we have made for material such as this.—D. C. Hosmann, The American Brass Co., Waterbury, Conn.

in fasteners
Southern is
GROWTH

Someone has said that it is no longer possible for business to stand still, for those which are stationary are left behind by those who are "on the **grow.**" Southern is dedicated to making better fasteners, giving better service, providing better packaging—at prices that are fair **and** competitive. It is not strange that Southern Screw's **growth** has kept pace with those we serve.

If yours is a **growth** company, Southern Screw in all probability is having an important part in your progress. If we are not now growing with you, perhaps it would be mutually beneficial to become a part of each other's **growth** pattern.

Direct your inquiries for quotations and samples to: Southern Screw Company, P. O. Box 1360, Statesville, N. C.

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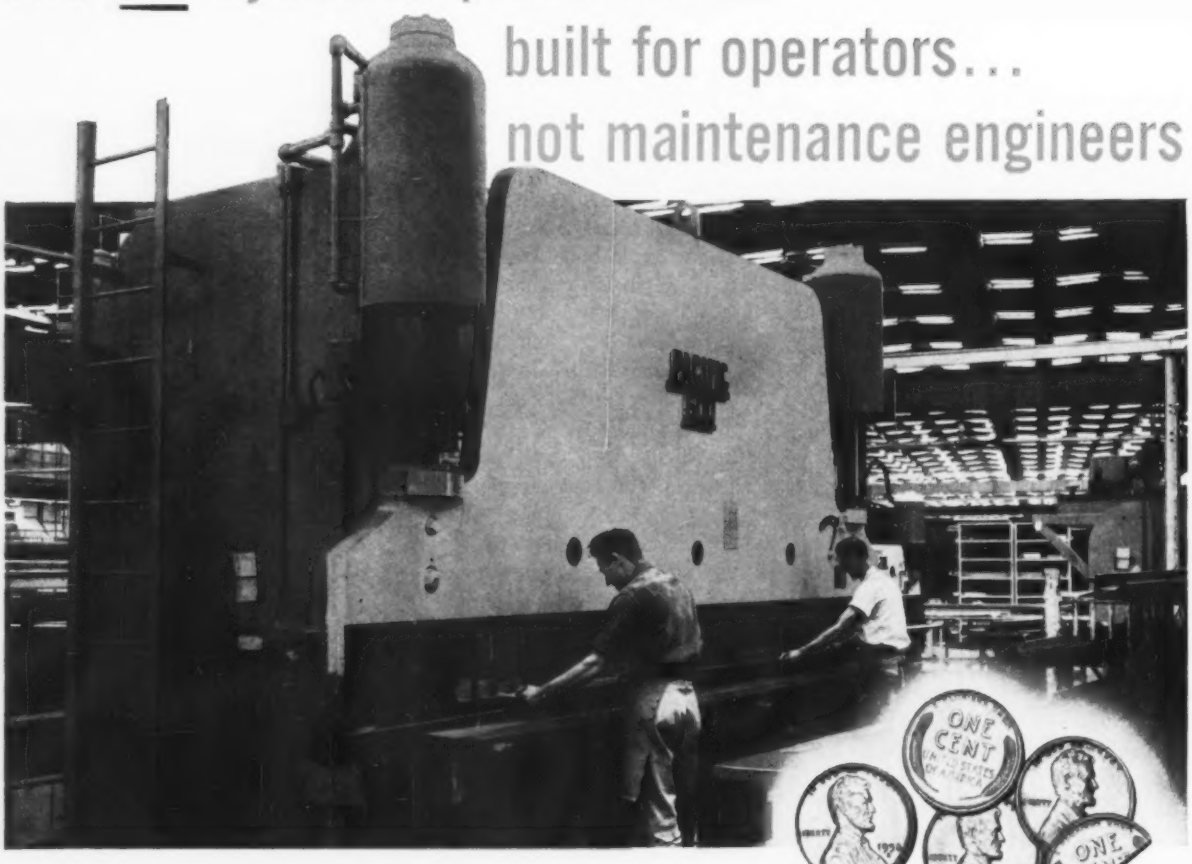

To all outward appearances many hydraulic press brakes may *seem* alike but that is where the similarity ends. Inside the PACIFIC is the most sensibly simple, patented level control system ever devised . . . only 6 microswitches and 2 relays provide the precise PACIFIC accuracy that no other hydraulic press brake can even remotely approach. Free of lineal variable differential transmitters, electronic amplifiers, photo-electric relays, amplidyne generators, complex hydraulic servo-valves, variable volume pumps and other complicated gadgets, PACIFIC hydraulic press brake can be kept in continuous operation by the ordinary plant maintenance man without the costly services of a professional hydraulic or electronic engineer from some distant factory. PACIFIC can be maintained for pennies per operating hour . . . only a fraction of the cost of the complicated machines.

Costs only 4.4¢ per hr. to maintain . . .

EARNS $7.50 NET PER HOUR

Pacific Hydraulic Press Brake at Atlas Universal Service, Inc., San Francisco, has operated continuously 16 hours a day for 9 years and 27 days with average maintenance downtime of only 5.2 hours per year and a total maintenance expense of 4.4¢ per operating hour.

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Pick a Language

If an Atlas Steels Ltd. salesman finds a hot prospect just about any place in the metalworking world, his work is more than half done.

It's just plain routine to present the message of this Canadian steelmaker.

"Atlas stainless combats corrosion in heat exchangers." Understand? Nein? Non? No? Well try one of these:

"L'acier inoxydable Atlas combat la corrosion dans les echangeurs de chaleur."

"El acero inoxidable Atlas contrarresta la corrosion en intercambiadores de calor."

"Rostfreier Atlas stahl bekampft korrosion in temperaturwechslern."

Monthly, Atlas assembles its message — case histories, expansions, technical advances, and such —into a booklet, "Atlas Steel Topics."

Delivering the Message—If you understand any of the above, you're receiving what Atlas is sending. The company prints its "word" in four languages—now that's not four editions. A single copy of "Atlas Steel Topics" has each story in Spanish, English, French and German.

And, maybe just in case there are a few illiterate metalworkers around, Atlas uses pertinent pictures to make things even clearer.

"I'll leave this with you, George —in case you don't come up with a solution to the problem."

Just a "Light" Snack

How do you like your steak, rare, medium or well-done? Are you pretty particular that it be done just right?

You can dial it, says the Kaiser Aluminum News. The publication of the Kaiser Aluminum & Chemical Co. calls attention to a steak tester made by a customer of theirs, Scott Thermo-Meter Co., Rochester, N. Y. Set the dial and when the steak is done just the way you want it, a light indicator glows politely.

How to Cook Steak—And, according to United Effort, published by the United Engineering and Foundry Co., Pittsburgh, you may soon be cooking that steak with nothing else but aluminum and sunlight. The company says solar heat reflected from a polished aluminum saucer "may be the next thing in outdoor cooking."

If you're more the indoor type, the aluminum people will likely have something for you also. Aluminum Co. of America commissioned Greta Magnusson Grossman to design a portable stove.

Modern Art—Looking more like modern art than a cooker, the Alcoa stove is two inter-revolving hemispheres on a vertical axis stuck in a criss-cross base. It is designed to be used with some modern method of heating such as ultrasonics, infrared, or electrical resistance.

One big advantage of the Forecast stove—It is designed to be portable. You can stand it right next to the martinis and not appreciably affect their temperature.

Now there's something those chesty aluminum people are not likely to fool with.

Photomicrograph of a cross section of a typical North PVC glove. Notice the extra-thick coating. That's where the wear is!

LESS LINER! MORE GLOVE!

That's why North PVC gloves by Jomac give longer service...better protection!

When you compare gloves, remember this: we use a special lightweight knitted liner and *extra coating*. Some manufacturers use heavy canton flannel liners and *less coating*. Although total weights may be the same, you get a better value with North PVC gloves, because you're paying for gloves . . . not liners! The wear, after all, is in the coating.

And that isn't all! We offer a better selection of sizes . . . and that means greater comfort, greater dexterity, greater productivity for every worker on every job.

FREE OFFER! On your business letterhead, send us complete details of your working conditions, and we will send you a sample pair. Do it today!

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you may be experiencing through the use of ordinary Steel Slitting Equipment.

These specialists are at your service to eliminate production (and profit) bottlenecks that are unique to your particular operation and can recommend and design a Custom-Built Slitter to your exact specifications, meeting all your production requirements, with predictable performance. Call or write TODAY.

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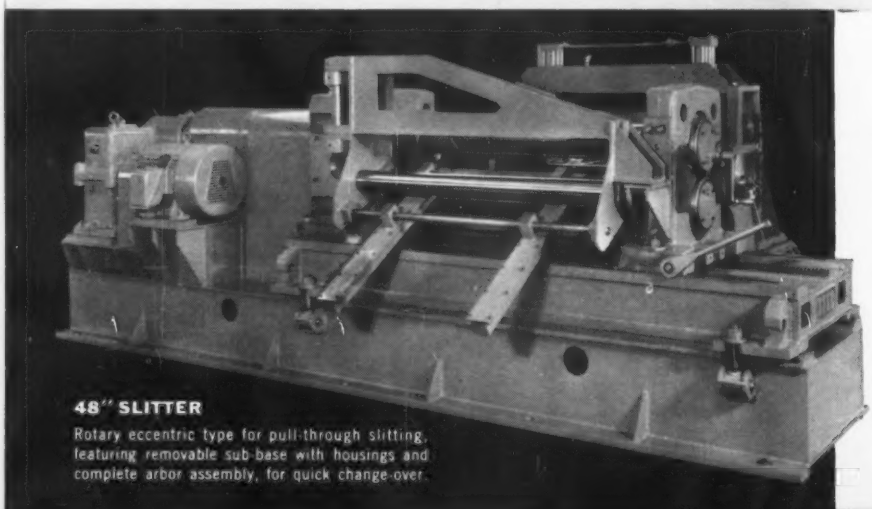

48" SLITTER
Rotary eccentric type for pull-through slitting, featuring removable sub-base with housings and complete arbor assembly, for quick change-over.

SECO Steel Mill Equipment

- Leveling and Shearing Lines
- Combination Edging and Flattening Lines
- Tension Reels for Strip Polishers
- Narrow Strip Grinding Machines
- Multiple Strand Pull-out Rolls and Take-up Frames
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- Traverse Reels for Narrow Strip
- Steel Coil Up-enders
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STEEL EQUIPMENT CO.
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COMING EXHIBITS

Instrumentation Show — Sept. 21-25, International Amphitheatre, Chicago. (Instrument Society of America, 313 Sixth Ave., Pittsbudgh 22.)

Metal Show — Nov. 2-6, International Amphitheatre, Chicago. (American Society for Metals, 7301 Euclid Ave., Cleveland 3.)

MEETINGS

JULY

Truck Trailer Mfrs. Assn.—Annual summer meeting, July 13-15, The Homestead, Hot Springs, Va. Association headquarters, 710 Albee Bldg., Washington, D. C.

Metal Lath Mfrs. Assn.—Meeting, July 21-22, Statler Hotel, Buffalo, N. Y. Association headquarters, Engineers Bldg., Cleveland.

Assn. of Roller & Silent Chain Mfrs.—Summer meeting, July 22-23, Grand Hotel, Mackinac Island, Mich. Association headquarters, 3343 Central Ave., Indianapolis.

SEPTEMBER

Pressed Metal Institute — Annual meeting, Sept. 13-17, Estes Park, Colorado. Institute headquarters, 3673 Lee Rd., Cleveland.

American Mining Congress—Metal mining - industrial minerals convention, Sept. 14-17, Denver, Colorado. Congress headquarters, 1200 18th St., N. W., Washington, D. C.

American Die Casting Institute—Annual meeting, Sept. 15-18, Edgewater Beach Hotel, Chicago, Institute headquarters, 366 Madison Ave., New York.

National Petroleum Assn.—Annual meeting, Sept. 16-18, Traymore Hotel, Atlantic City, N. J. Association headquarters, Munsey Bldg., Rm. 958, Washington 4, D. C.

Steel Founders' Society of America—Fall meeting, Sept. 21-22, The Homestead, Hot Springs, Va. So-

(Continued on P. 16)

"FASTER FROM FOSTER" service delivers any kind of pipe ...ANYWHERE

One call to any of Foster's six nationwide warehouses gets you immediate delivery of all the pipe you need, regardless of type, size or specification. L. B. Foster Company has made a specialty of supplying the "hard-to-get" sizes, the unusual walls, the extra large quantities.

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Four "Bonus Values" Add to the Safety of Acco X-Weld Sling Chains!

• For certain types of lifts, there is one and only one product to use for maximum safety and efficiency... chain! But why only chain? Because chain offers qualities of tensile strength and flexibility not found in any other material. The next time you are confronted with an extra-heavy lifting problem, don't take a chance with a makeshift sling *that may not do the job!* Be sure... with ACCO *Registered* Sling Chains! Only with ACCO *Registered* Sling Chains do you get these four "bonus values" which add materially to the worth, but not the cost, of the sling...

1. **Accoloy X-Weld Chain** for extra strength. X-weld hangs straight... cannot kink... has extra resistance to bending
2. **New Shaped Master Link** is designed to withstand deformation under loads up to 18% greater than round section link
3. **Acco Registration Ring** is serially numbered as evidence that the sling has been proof-tested at twice its working load limit
4. **Registration Certificate** signed by American Chain & Cable Company attests to the field-design of the complete sling

Only ACCO *Registered* Sling Chains, with Magnafluxed-tested hooks, give you premium quality features at regular prices. Find out about them from your nearby ACCO *Registered* Sling Chain Distributor or write us at York, Pa., for full details.

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*Indicates Warehouse Stocks

ACCO

EXHIBITS, MEETINGS

(Continued from P. 15)

ciety headquarters, 606 Terminal Tower, Cleveland.

Electronic Industries Assn.—Quarterly meeting, Sept. 22-24, Plaza Hotel, New York. Association headquarters, 1721 DeSales St., N. W., Washington 6, D. C.

Porcelain Enamel Institute, Inc.—Annual meeting, Sept. 24-26, The Greenbrier, White Sulphur Springs, W. Va. Institute headquarters, 1145 19th St., N. W., Washington 4, D. C.

Association of Iron & Steel Engineers—Convention, Sept. 28-Oct. 1, Sherman Hotel Chicago. Association headquarters, 1010 Empire Bldg., Pittsburgh.

American Welding Society — National fall meeting, Sept. 28-Oct. 1, Hotel Sheraton-Cadillac, Detroit. Society headquarters, 33 W. 39th St., New York.

OCTOBER

National Assn. of Sheet Metal Distributors — Annual meeting, Oct. 4-7, Atlantic City, N. J. Association headquarters, 1900 Arch St., Philadelphia 3.

Truck Body & Equipment Assn., Inc.—Annual convention and exhibit, Oct. 5-7, Sherman Hotel Chicago. Association headquarters, 1616 "K" St., N. W., Washington 6, D. C.

American Gas Assn.—Annual convention, Oct. 5-7, Chicago. Association headquarters, 420 Lexington Ave., New York.

Society of Automotive Engineers—National aeronautic meeting, aircraft manufacturing forum and engineering display, Oct. 5-10, Ambassador Hotel, Los Angeles. Society headquarters, 485 Lexington Ave., New York 17, N. Y.

Gray Iron Founders' Society, Inc.—Annual meeting, Oct. 7-9, Fairmont Hotel, San Francisco, Calif. Society headquarters, 930 National City-E. 6th Bldg., Cleveland.

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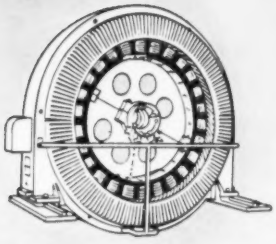

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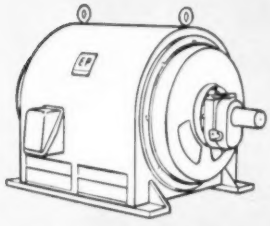
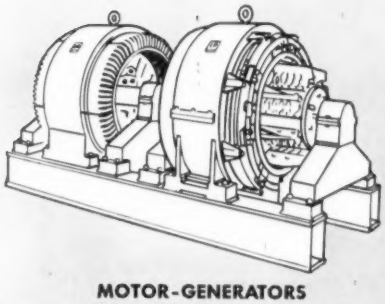


INDUCTION MOTORS
60-1750 HP
ASK FOR BULLETIN 37-200



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¾-1500 KW
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CONTINUOUS A-C and D-C POWER SYSTEMS
GENERAL-PURPOSE MOTOR-GENERATORS
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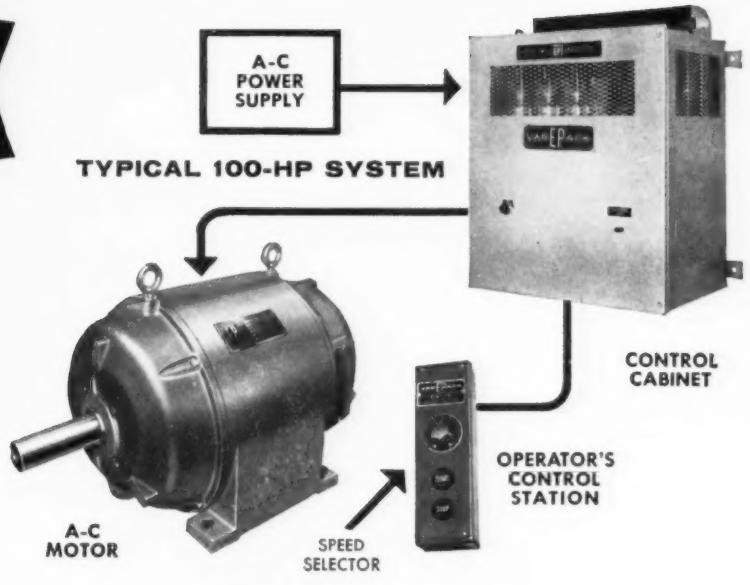

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VarEPack is today's answer to adjustable-speed requirements. It operates from alternating current, eliminating the need for costly and cumbersome current-conversion equipment. It connects directly to the load. No complicated belts or clutches are required.

VarEPack is the simplest, smallest, lightest and most compact adjustable-speed drive available.

With VarEPack, speeds can be selected or changed while the equipment is idle or while in operation. Changing speeds is done either manually or automatically by remote control. After the desired speed is selected, it remains constant regardless of load fluctuations or temperature changes.

VarEPack provides the smoothest starting and stopping . . . finger-tip control of acceleration and deceleration . . . fast, positive reversing . . . an infinite range of stepless speeds . . . and jogging, inching and creeping. For complete details . . .

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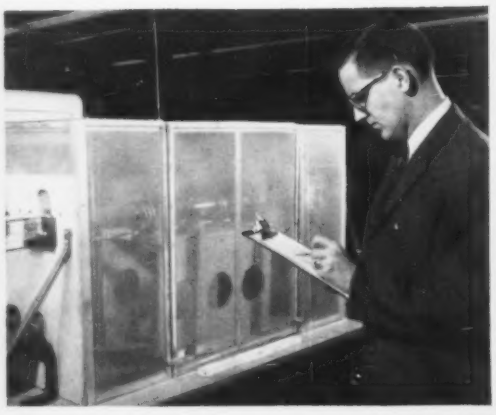

THE FIRST STEP in making transistors at Sylvania is the zone refining of germanium ingots carried out in a horizontal induction furnace. The required hydrogen-nitrogen atmosphere is supplied by Airco. Impurities, which migrate to one end of the molten bar, are cut off after cooling, and a pure polycrystalline bar of germanium is obtained.

AIRCO INDUSTRIAL GAS SERVICE IS PART OF THE PICTURE

when Sylvania makes precision transistors

Today, the electronics industry, aircraft and missiles, steel, chemicals, food processing and many other industries require vast supplies of industrial gases.

In fact, many of industry's most spectacular products and processes are possible only because of industrial gases. A case in point—the transistor picture-caption story told here.

In the use of industrial gases, dependability of supply and service is of prime importance. Airco is a dependable, nation-wide supplier of industrial gases. These include:

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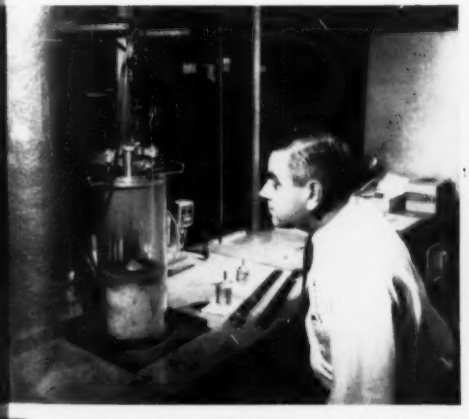
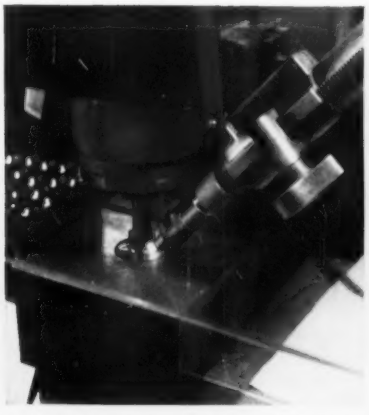
The Airco Technical Service Organization is in a position to design the equipment required for advanced processes and precision products that involve industrial gases. It will help you work out efficient and economical applications. Airco also supplies a complete range of welding and cutting equipment and electrodes—all Airco-designed.

If you are interested in improving a product or process . . . need an especially tailored grade of gas . . . are considering the advantages of a permanent installation, you will find Airco Gas Service fits your needs precisely.

Call in your nearby Airco Engineering Service Representative and talk it over.



NEXT IN THE PROCESS, a single high purity crystal is grown from the polycrystalline germanium. It is a critical step, performed in a vertical induction furnace, with an inert atmosphere of Airco gas. The resulting crystal—99.999999% pure—then is sliced into miniature dice—the heart of a Sylvania transistor.



TRANSISTOR NEARS COMPLETION. Germanium wafer has been formed and fixed. And here a circular precision weld is made on deoxidized copper, joining cap and base. Equipment is the fully automatic Airco Heliweld unit. Electrodes, Airco Thortung. Shielding gas, Airco argon.

THE PERMANENT industrial gas installation at Sylvania, designed and serviced by Airco. Like the many other Airco gas installations, this one is assurance of high purity . . . dependable supply . . . utmost economy.

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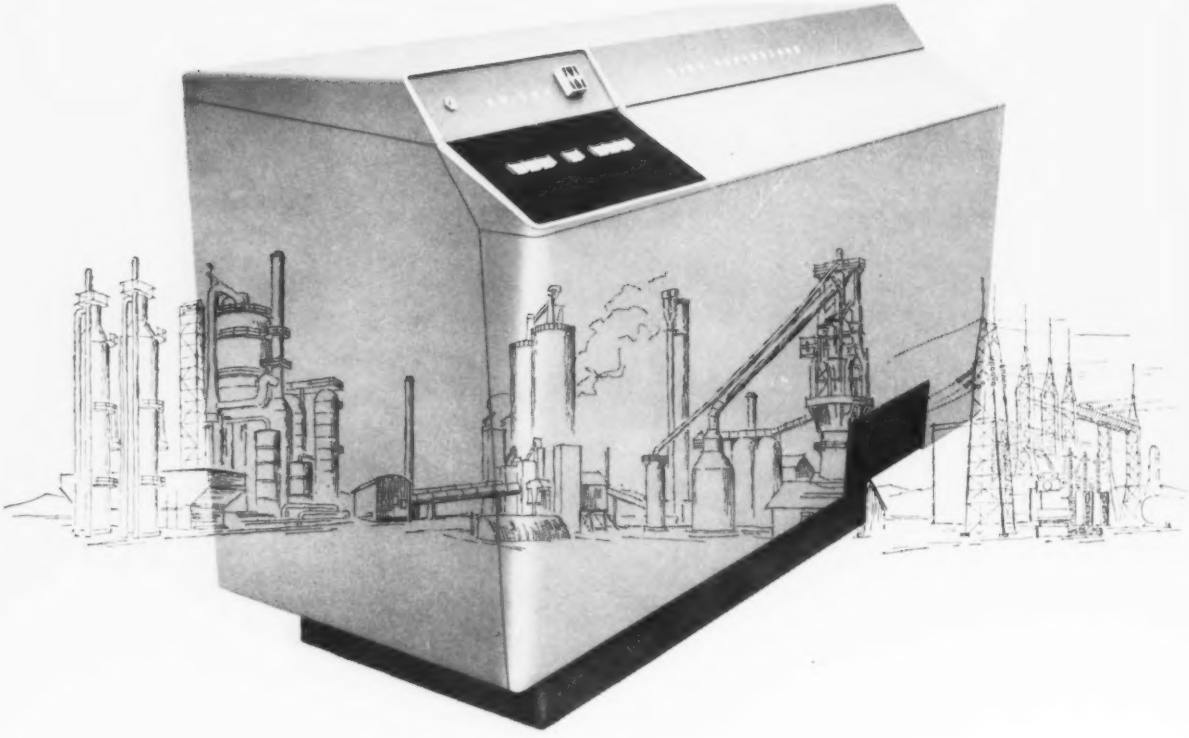

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OPERATING SYSTEMS incorporating the RW-300 for on-line control and data reduction are demonstrating these tangible benefits: *reduced costs, increased output, improved quality.*

HIGH RELIABILITY, inherent in the advanced design of the RW-300, is being proven by thousands of hours of dependable operation.

SYSTEMS ENGINEERING staff, experienced in the analysis of complex control and data reduction problems, is assisting industry with applications of the RW-300 in chemical, petroleum, steel, cement, electric power, and other fields.

NATION-WIDE SERVICE organization is providing skilled maintenance for this completely developed, production engineered, and thoroughly tested piece of *industrial* equipment.

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a division of ***Thompson Ramo Wooldridge Inc.***

PPER-COATED **Thomas Strip** coils, 1½" wide, are made into the intricate television control part shown in the inset.

homas Strip Is Cost-saver at TV Parts Plant

20 years, copper-coated Thomas p steel was known at Chicago Tele- ne Supply Corp.'s Elkhart, Ind., nt as the metal to conquer a metal-working plague—scalloping during deep draws.

Now the precision-rolled product of Pittsburgh Steel Co.'s Thomas Strip Division has new claims to fame. It makes possible a one-piece, extruded and stamped mounting plate used to assemble and connect the variable resistor to the television set chassis.

Previously, Chicago Telephone made the grounding plate and mounting bushing in two pieces. The bushing being a relatively expensive brass mounting device, Thomas' copper-coated makes it possible to blank out the intricate part, punch a hole in its center and then extrude the edge of the hole into a load-bearing neck. All this is done at high production speeds with progressive blank and form dies.

In many applications at Chicago Telephone, similar severe demands are imposed. Examples:

▶ **THICKNESS TOLERANCE**—As tight as ±.0005". A variation of ±.001" can cause a potentiometer cover to be off .005".

▶ **UNIFORM TEMPER**—Some parts are made at speeds up to 400 units per minute. Any wide hardness deviation results in troublesome forming variations.

▶ **SHEARABILITY**—Punched and blanked parts have tolerances so snug that the slightest burr prevents proper assembly.

▶ **UNIFORM COPPER COATING**—Copper acts as a necessary die lubricant and a base for nickel plating. When the mounting plate was made from plain steel, die life ranged from 40,000 to 62,000 units. Now, with the more difficult mounting plate, die life averages 250,000 units between regrindings.

Whether you need dimensional accuracy, surface, temper, aid to die life, chemistry or design and production advantages, you'll find them in Thomas Strip. It is a controlled rolled steel, plain or in a variety of electrolytic coatings of copper, brass, nickel, zinc, tin, chrome and lacquer with a full range of tempers, widths and finishes. Thomas Strip also is available with an attractive but durable pattern rolled right into its surface. For details, contact any sales office. Do it today.

Thomas Strip® Division

Pittsburgh Steel Company

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, 1959

Techline advances new concept of supplies services for precision finishing industry

Only Techline offers you all your supplies for both the wet blast and barrel finishing processes from one convenient and dependable source.

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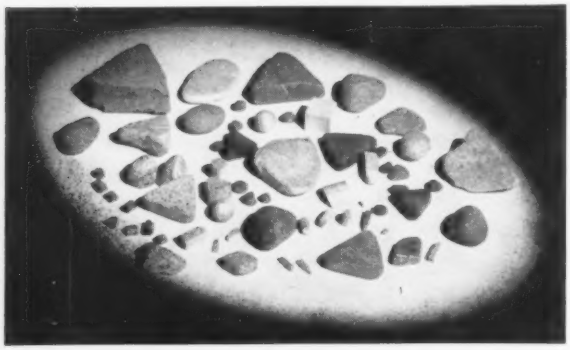
For Barrel Finishing

Techline engineers have evolved new finishing techniques based on Wheelabrator Corporation's unequalled knowledge of cleaning and finishing processes, and utilizing the newest abrasive media and compounds. They are carefully selected for quality and uniformity and are formulated to achieve precisely the results you require.



For Wet Blasting

Techline Liquamatte equipment and supplies are well established as the most successful means of achieving precision finishes in wet blasting. Additives such as Anarust and Anaset, and newly-developed protective coatings for the finished work, assure you of optimum results in every application of Techline wet-blast equipment and Liquabrasives.

Techline shatters an industry's traditions — makes precision finishing a science.

New packaging developed for Techforms and Chempounds

For maximum convenience of handling and storage in your finishing department, Techline offers Techforms, Techangles and Chempounds in sturdy 50-lb. cartons as well as 400-lb. bulk containers. From a practical standpoint, carton packaging of Chempounds assures you of peak potency and freshness, since smaller quantities are exposed at a time. All Chempounds are compounded and packaged to order, to arrive in prime condition.

How you can use Techline's sample processing service

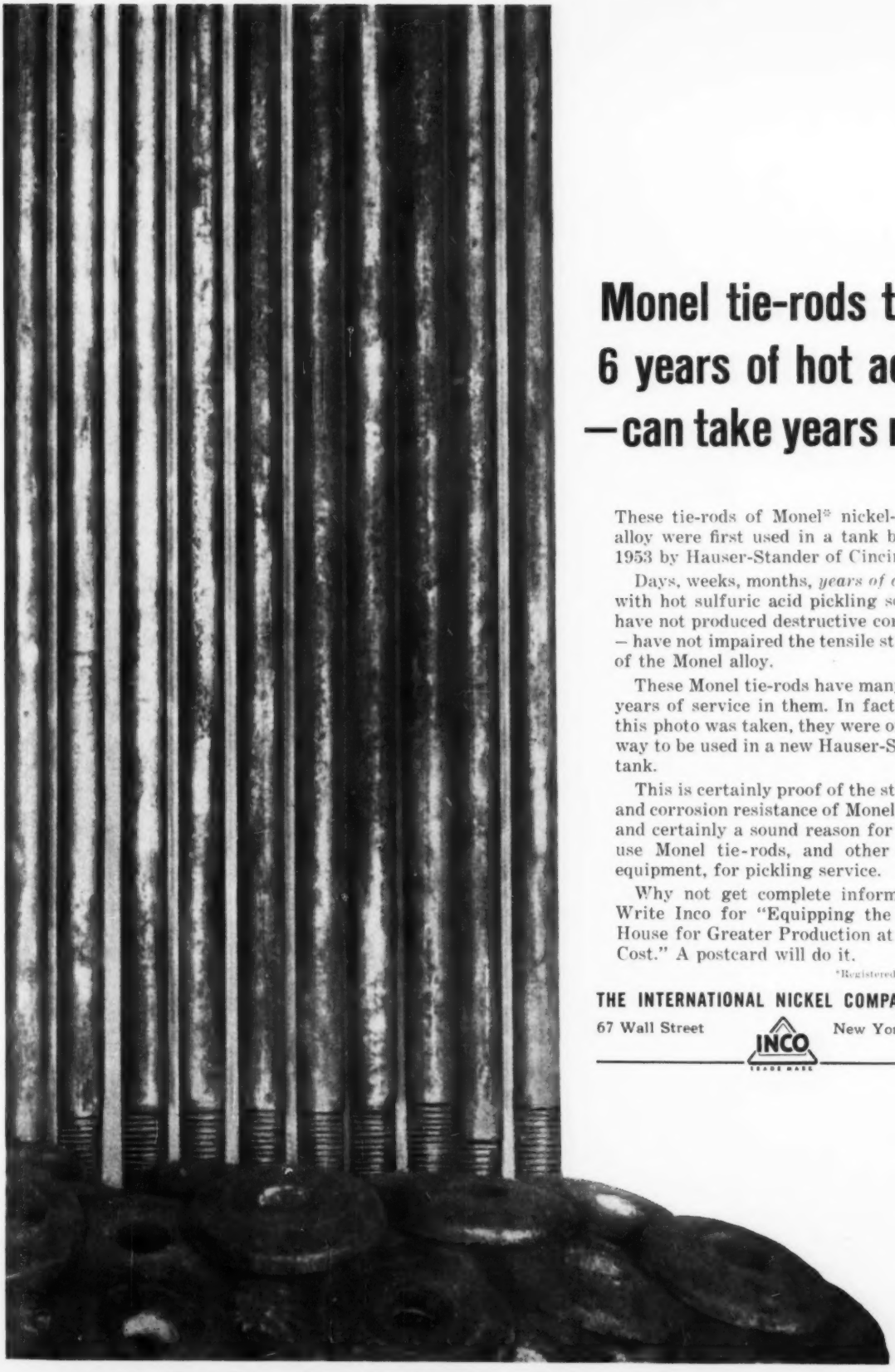
Techline is prepared to prove the savings you will realize through use of Techline barrel finishing or wet blasting equipment and supplies. Techline engineers will make a test demonstration in our modern laboratory, using actual samples of your production parts. You may send sample parts for analysis and testing without cost or obligation.

Write for Details of this Service

Your local Techline sales engineer will provide samples of Techline media and Chempounds to try in your own production. And he will arrange for a demonstration or sample test in our laboratory. Or, for detailed information and supplies prices immediately, write to Techline at Vicksburg, Michigan.

Techline
division of WHEELABRATOR CORPORATION

2450 Avenue V, Vicksburg, Michigan



Monel tie-rods take 6 years of hot acids —can take years more

These tie-rods of Monel* nickel-copper alloy were first used in a tank built in 1953 by Hauser-Stander of Cincinnati.

Days, weeks, months, *years of contact* with hot sulfuric acid pickling solution have not produced destructive corrosion – have not impaired the tensile strength of the Monel alloy.

These Monel tie-rods have many more years of service in them. In fact, when this photo was taken, they were on their way to be used in a new Hauser-Stander tank.

This is certainly proof of the strength and corrosion resistance of Monel alloy– and certainly a sound reason for you to use Monel tie-rods, and other Monel equipment, for pickling service.

Why not get complete information? Write Inco for "Equipping the Pickle House for Greater Production at Lower Cost." A postcard will do it.

*Registered trademark

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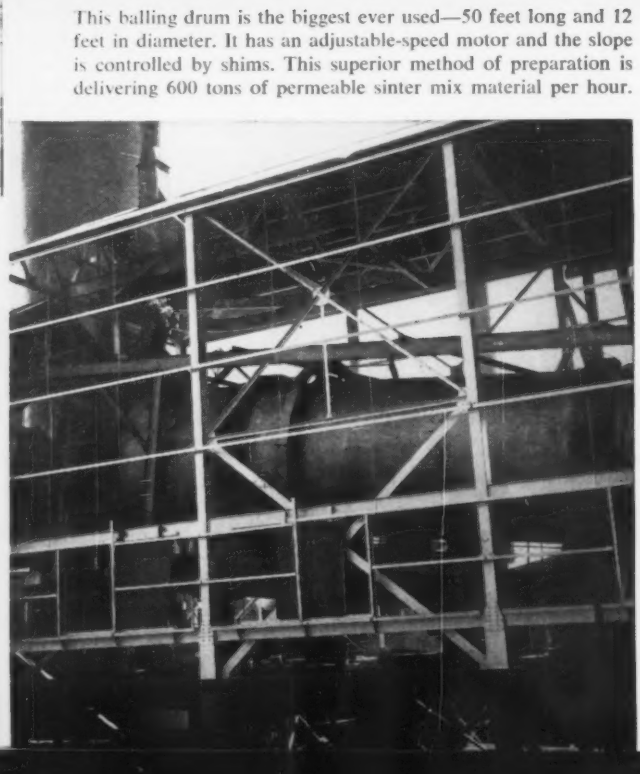
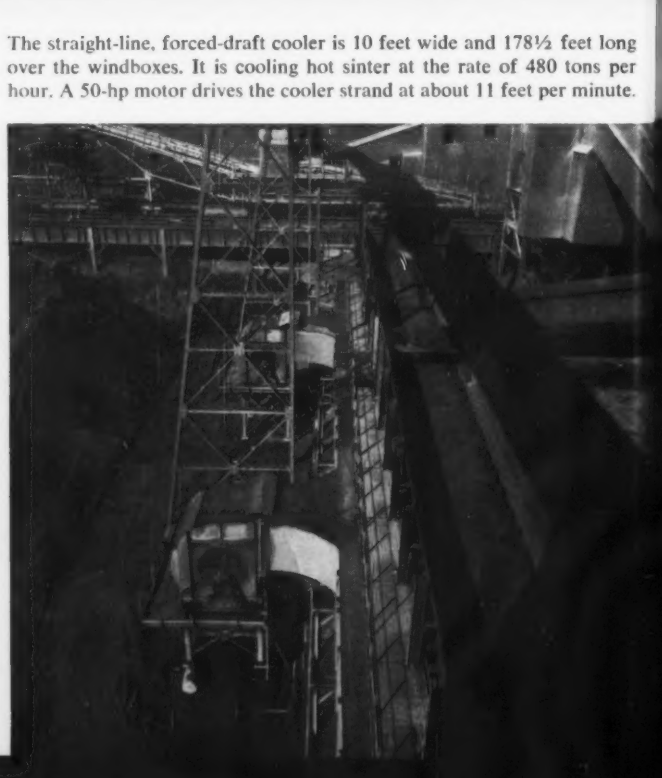
GREAT LAKES S

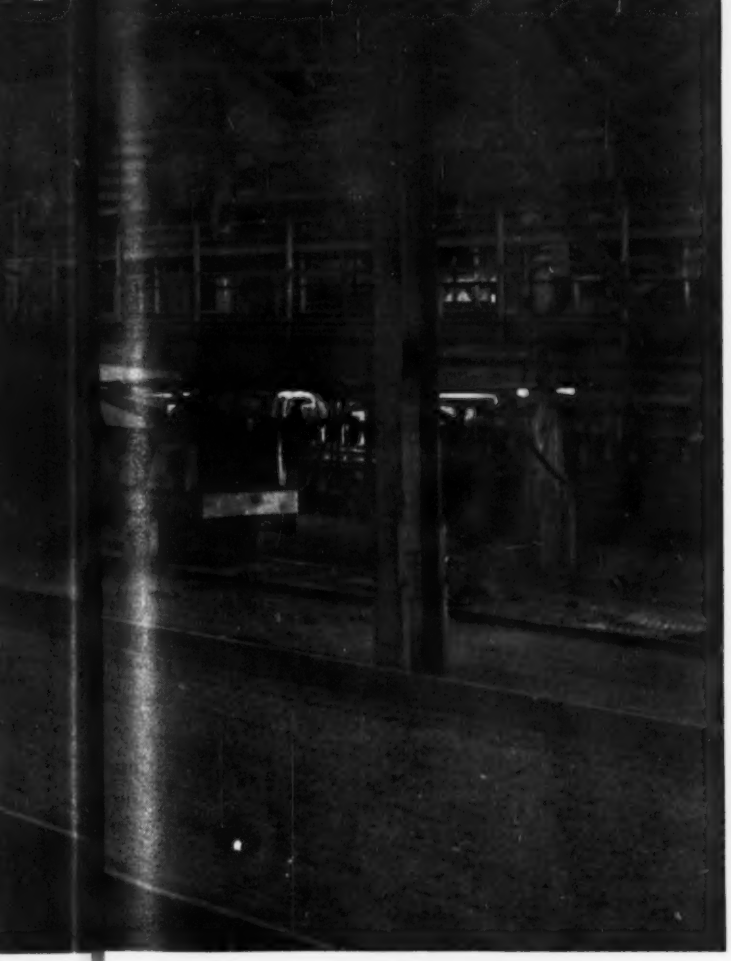
This balling drum is the biggest ever used—50 feet long and 12 feet in diameter. It has an adjustable-speed motor and the slope is controlled by shims. This superior method of preparation is delivering 600 tons of permeable sinter mix material per hour.



The straight-line, forced-draft cooler is 10 feet wide and 178½ feet long over the windboxes. It is cooling hot sinter at the rate of 480 tons per hour. A 50-hp motor drives the cooler strand at about 11 feet per minute.

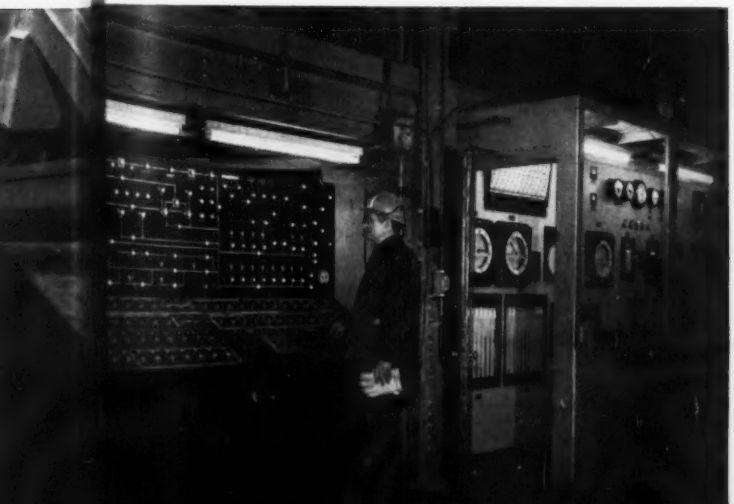


ES STEEL SETS INDUSTRY RECORD



feet long
tons per
minute.

Operation of the sintering plant and materials handling systems is controlled from this panel board, located at the feed end of the sintering machine. It's the largest iron ore sintering machine in the world.



8,400 tons of sinter per day in new plant built by KOPPERS

It's the largest iron ore sintering machine in the world —12 feet wide and 200 feet long over 19 double windboxes. It's a giant, but operates with a very high efficiency. Total output of 8,400 tons from *one* machine in a single day is a new record for sintering.

This plant is part of the continuing expansion program at the Zug Island Works of Great Lakes Steel, a Division of National Steel Corporation. The company foresees a hot metal production increase of 20 to 30%, due largely to the sintering and ore handling facilities designed and built by Koppers Company, in cooperation with engineering and operating personnel from National Steel.

The new facilities include an ore handling system, an ore crushing and screening station, a miscellaneous materials handling system, a sintering plant, and a sinter handling system. The installation has 84 conveyors, with widths up to 48 inches and capacities to 1,250 tons per hour.

Many of the features in this installation are entirely new to commercial plant operation. You might be interested in the complete story, which is covered in an 18-page booklet, "Ore Handling and Beneficiation at Great Lakes Steel." For a free copy, please write to Koppers Company, Inc., Engineering and Construction Division, Room 1124, Pittsburgh 19, Pa.

KOPPERS

KOPPERS

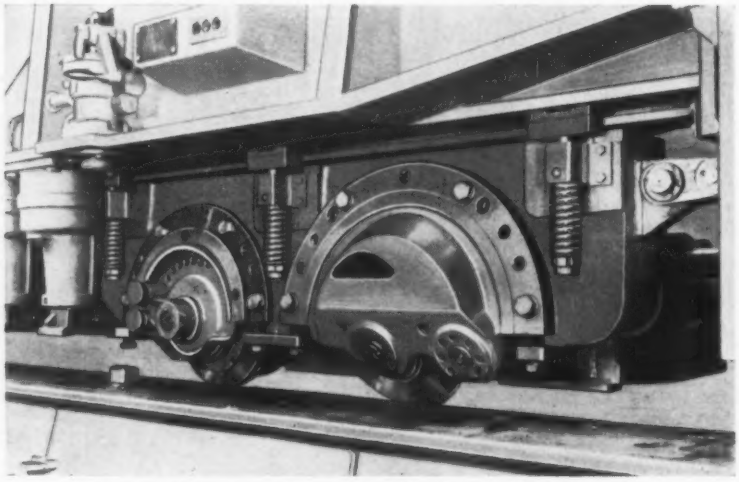
ENGINEERING AND CONSTRUCTION

A Completely New Method Of Heavy Duty Shearing

by

SCHULZE & NAUMANN

Roller Shears



Close-up of carriage with shearing rollers for straight and bevel cut

Schulze and Naumann Roller Shears bring you an entirely new concept of heavy duty shearing—providing tremendous improvements in accuracy, quality of cut, speed and economy over older, flame cutting methods. Most models can even be built as combined shear and plate edge planers.

Shearing Principle. Plates are sheared between a lower knife and an upper roller shear. A powerfully driven carriage carries two shearing heads, one for straight and one for bevel cuts.

Planing. Powerful planing equipment can be added to produce, for example, double vees or profiled edges. Planing capacity can be much larger than shearing capacity.

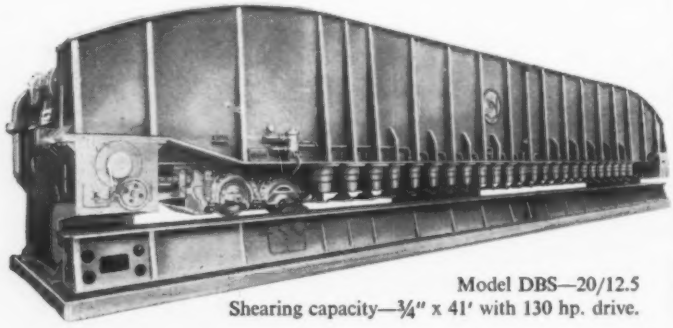
Capacity. Plates up to 1½" thick by 55 feet long can be sheared in one setting.

Accuracy. Extremely rigid design and powerful, positive hold-downs guarantee cuts of unequalled accuracy and quality.

Speed. Shearing speeds up to 112 feet per minute are possible. An S&N Shear will cut a greater total length in one day than any other method.

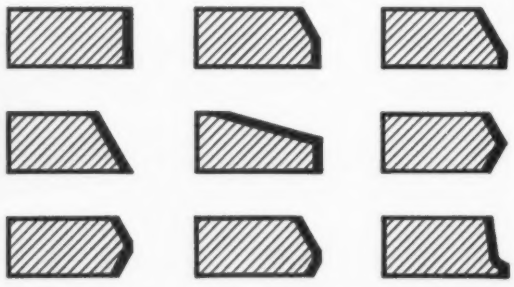
Versatility. Any type of edge preparation is possible, including straight, beveled or combined cuts.

Five different models to suit your needs.



Model DBS—20/12.5
Shearing capacity—¾" x 41' with 130 hp. drive.

EDGES PRODUCED ON S & N ROLLER SHEARS



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NOW...A COMPLETE LINE OF SOLID KENNAMETAL* END MILLS

stocked for immediate delivery

Now, Kennametal Inc. offers you a complete line of solid, precision ground end mills made of the same consistently high quality tungsten carbide that has been used for years in other types of Kennametal cutting edges for the metalworking industry.

Developed in 1938, Kennametal was the first hard cemented carbide to successfully cut steel. Since that time, many varied compositions or grades have been developed for practically every metal cutting requirement. Kennametal is known all over the world for its consistently high quality tooling for precision operations. Methods of manufacture used today by Kennametal help produce exceptional properties of wear resistance and high strength not found in the hardest of alloy steels or conventional carbides.

New 12-page Catalog now available. Ask your Kennametal Representative for a copy or write KENNAMETAL INC., Latrobe, Pennsylvania.

For every job requirement. Stocked in fifteen different styles, new Kennametal End Mills are available in diameters from 1/16" to 3/4" . . . a size and style to accurately match your milling requirements.

For better finish. Kennametal has an extremely high YME . . . up to 94 million psi . . . three times that of the hardest steel. High hardness, plus one-piece construction, provides maximum rigidity for smooth, even finish.

For longer life. Kennametal End Mills are *all-carbide* . . . eliminates brazing failure, and provides maximum resistance to heat and abrasion. 97219

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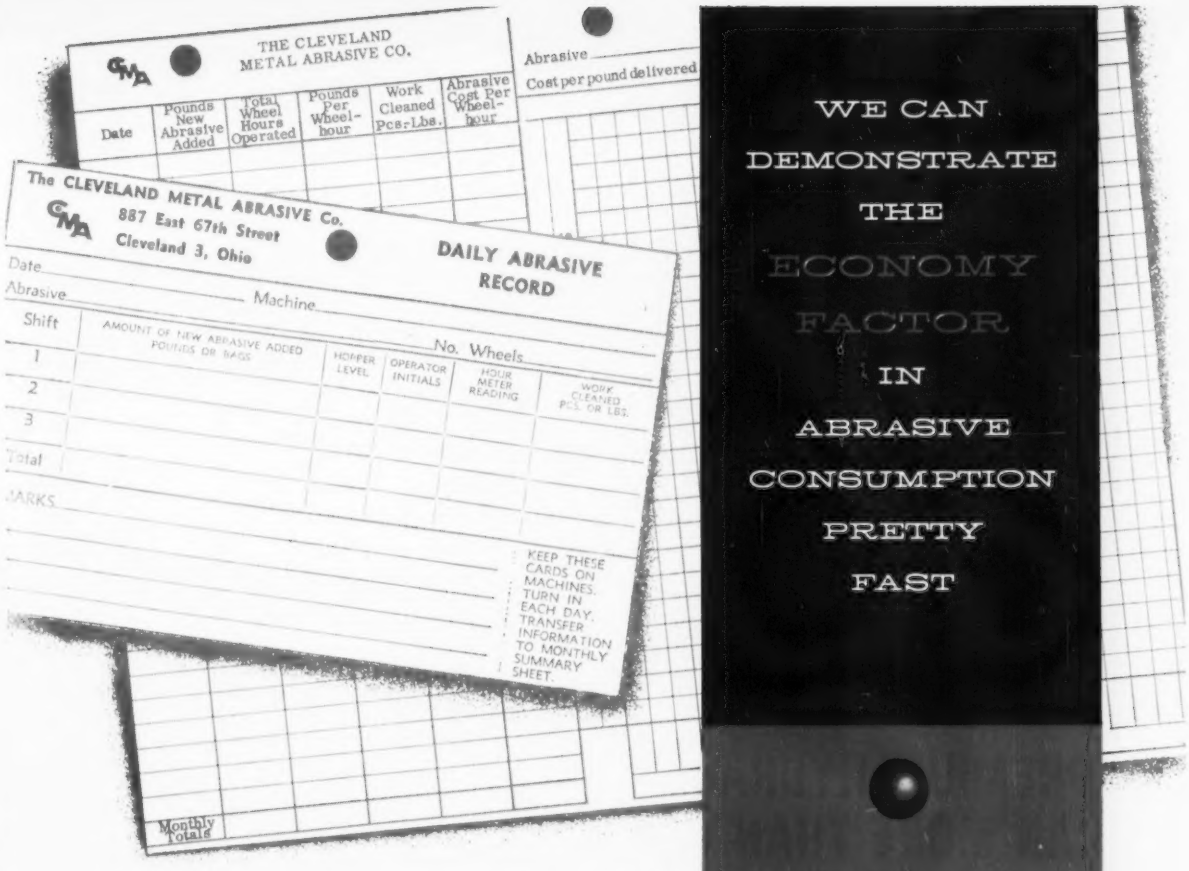

WE CAN DEMONSTRATE THE ECONOMY FACTOR IN ABRASIVE CONSUMPTION PRETTY FAST

Simple arithmetic and common sense establish the pattern. It's simply a matter of making high quality, *long-lasting* abrasives. The less you use, the more money you save. Take Cleveland High-strength "A" iron shot and grit. Greater abrasive life and decreased machine maintenance costs offset any minor increase in initial costs. Bargain prices cut no ice . . . ever.

Prove to yourself the savings you get from this, and other, Cleveland Metal Abrasives. Write—and ask for our new abrasive cost system, which our engineers can quickly establish for each machine, at no cost to you.

Also write us today for more information, together with new catalog No. 159, or call our nearest representative.

CLEVELAND is the name and the place for PERSUASIVE ABRASIVES

1. Realsteel Shot and Grit	2. Pearlitic Malleable	3. Normalized
4. "A" Iron	5. Hi-Strength "B"	6. Chilled Iron
		7. Cut Wire

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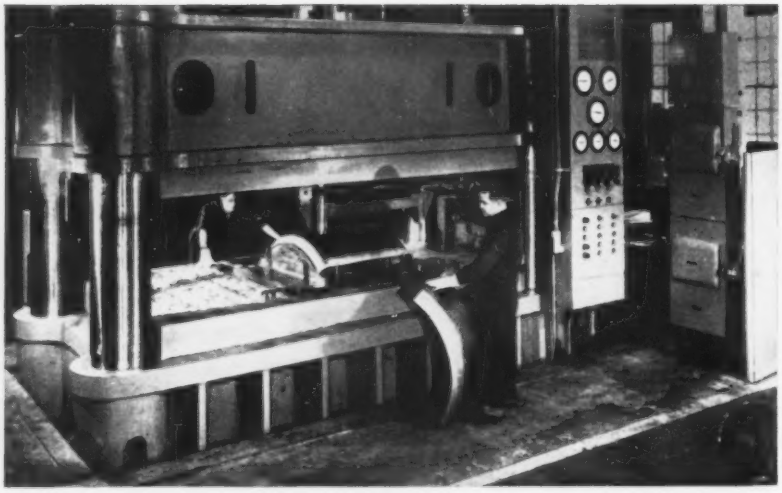
Lubrication



PREMIUM HYDRAULIC OILS CAN MORE THAN PAY BACK THEIR INITIAL EXTRA COST

Laboratory experiments, exhaustive field tests and, finally, general industrial experience have conclusively proved the long-term economy of a premium hydraulic oil over even the best straight mineral oil.

What makes a premium oil different? Straight mineral oil is a highly refined product containing many good lubricating qualities. However, it may be subject to fairly rapid oxidation, and it foams persistently when agitated.

On the other hand, a premium hydraulic oil, like Texaco Regal Oil R&O, contains a number of additives specifically designed to minimize or eliminate the undesirable qualities of straight mineral oil, while retaining the good.

Importance of these qualities in a hydraulic system. Oxidation, rust and foam all breed trouble in hydraulic sytems, even though they may not be immediately apparent. Because Regal Oil R&O is specifically inhibited to guard against these dangers, you can expect four distinct areas of savings, in spite of higher initial cost, when you install this premium oil in your hydraulic equipment:

It saves man-hours. Because a premimum hydraulic oil is inhibited against oxidation and rust, it will not form sludge in the system or allow parts to corrode. This can more than double the intervals between scheduled overhauls, saving valuable maintenance man-hours.

It prevents production losses. By keeping hydraulic systems clean, Regal Oil R&O guards against those sudden, unexpected stoppages that halt production, are costly to overcome. Pumps and other parts last much longer, too.

It cuts rejects when used in production equipment. Regal Oil R&O is inhibited against foaming. And foam, which causes jerky operation, can be a large factor in ruined machine parts.

It reduces oil drains. Because Regal Oil R&O lasts longer than straight mineral oil, systems don't have to be refilled nearly so often. The savings on this one factor alone are often enough to counterbalance the higher initial cost of Regal Oil R&O.

Way found to coat steel concrete forms without wasting oil

How to coat steel concrete forms without wasting a large amount of the oil in run-off has always been a problem for manufacturers of concrete products.

One of the country's leading concrete pipe producers has now licked this problem by using a 50-50 mixture of diesel fuel and Texaco Stazon. Originally developed as a non drip product for textile mills, this unique Texaco lubricant clings just as well to steel forms. The pipe manufacturer reports that run-off has now been eliminated completely. The new mixture can be used in temperatures as low as 0°F and can be either sprayed or painted on the forms.

MOVIE OF THE MONTH

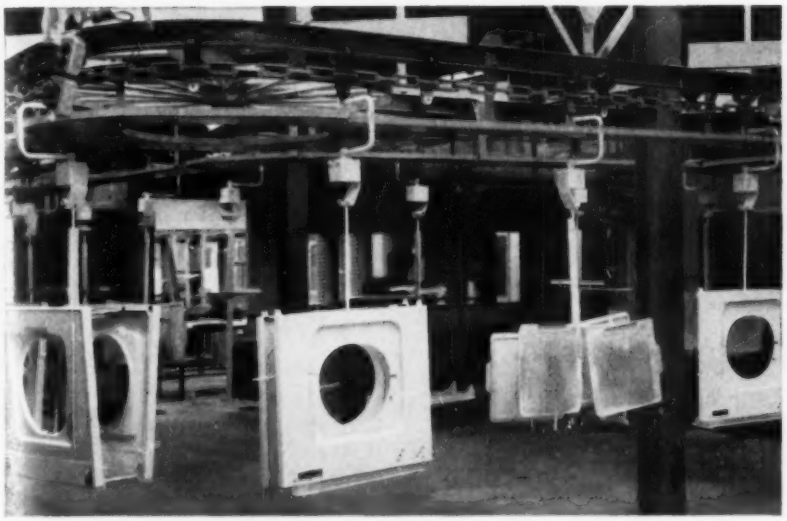
SEE...

"Shear Magic"

Texaco's new full-color film on the nature and uses of grease is a must-see feature for anyone interested in getting the most out of grease-lubricated equipment.

news

TEXACO REG. T.M.



How manufacturer eliminated rejects caused by flaking conveyor

Flakes of rust dropping from the plant-wide conveyor system onto newly painted finishes were causing an unhealthy 10% reject rate for one manufacturer of large household appliances. His problem: the conveyor traveled through areas where the humidity was high, as well as through baking ovens. These widely varying heat and moisture conditions were too much for the conveyor finish.

Texaco called in. Although the problem was not directly associated with lubrication, the visiting Texaco Lubrication Engineer heard about it and recommended having the conveyor sprayed with Texaco Rustproof Compound L. This versatile Texaco product withstood both the excessive humidity and the high temperatures that the conveyor encountered in its travels around the plant. Rusting ceased and rejects of the finished product dropped drastically from 10% to a normal 1½%.

New Seagram building gets cutting oil bath

In one of the most unusual uses for a petroleum product yet, the Seagram building, on New York's Park Avenue, recently employed Texaco Sultex Cutting Oil as a bath for its unique bronze facade. The reason: a dark "antique" surface on the metal was wanted, and the sulphur in Sultex reacted nicely with the bronze to give the desired effect of age!

NEW PRODUCT NEWS

New tool joint compound resists pressure used in joining pipes, and joints can be broken without using much more torque than was applied in making them up. Primarily for use in oil fields. Makes an excellent thread lubricant anywhere where cost is a big consideration.

Lube facts to be aired for metal-working plants

The story of many of the less common, "odds and ends" lubricants used in metalworking will be told in the July issue of "Lubrication" magazine. The editors plan to discuss roll oils (both ferrous and non-ferrous), lubricants for hot punching, deep press drawing, wire drawing and the like. To be sure you're on the list to get this important issue, mail coupon.

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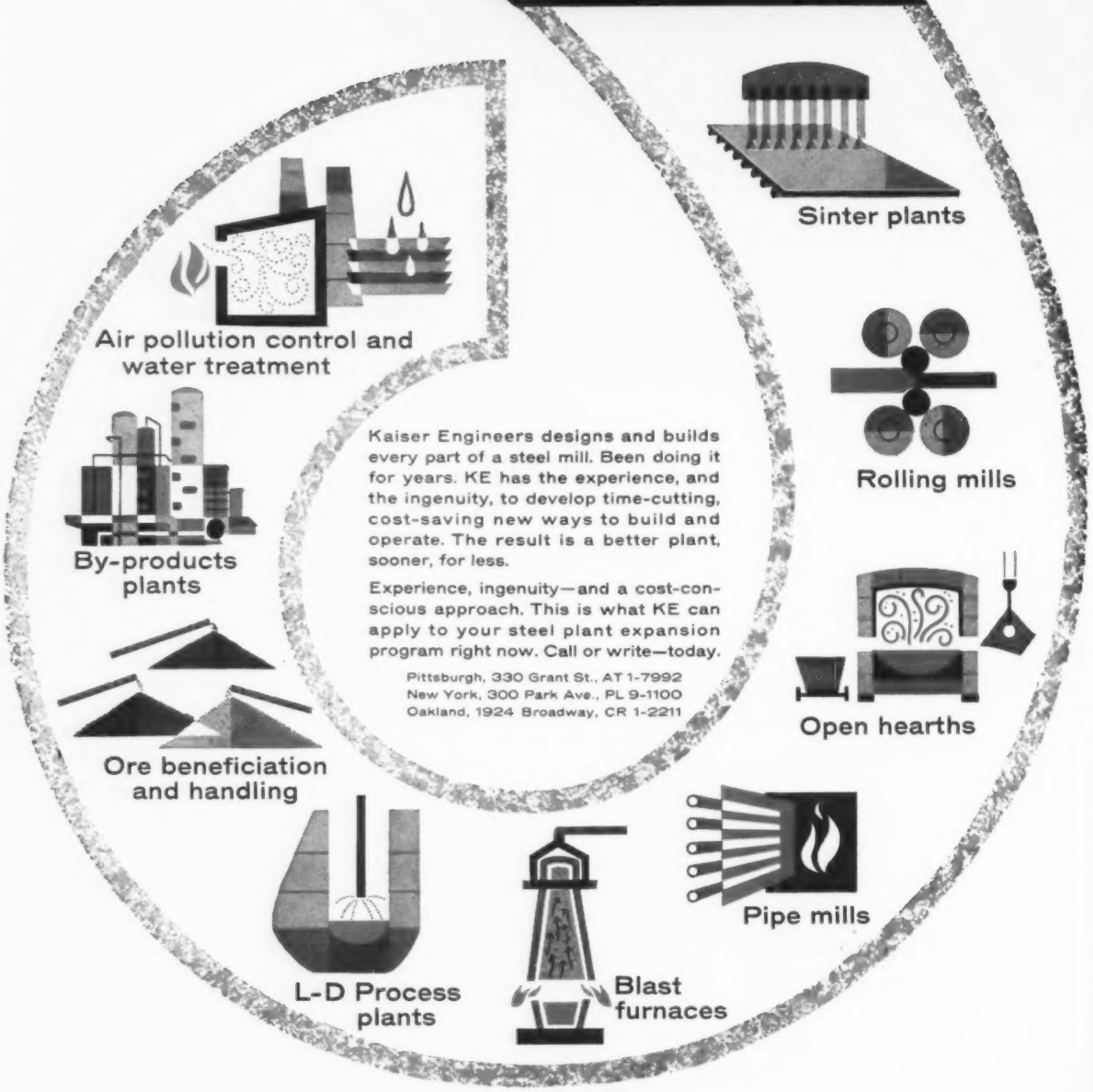

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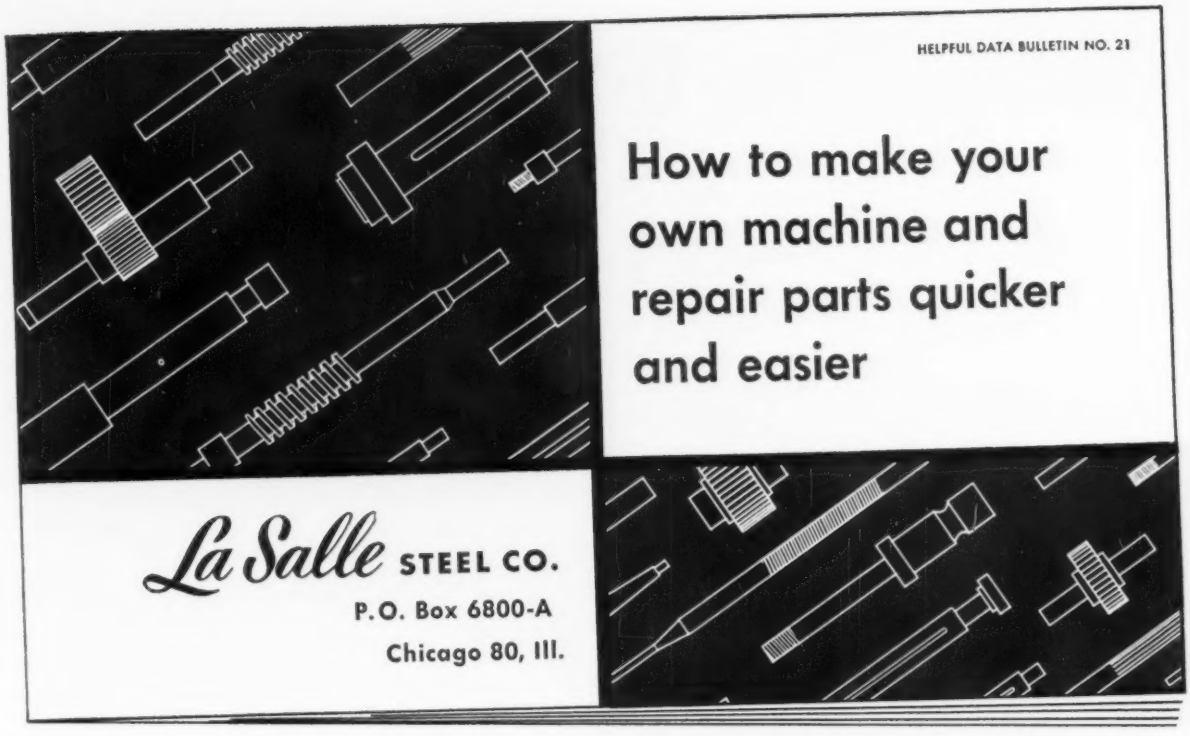

HELPFUL DATA BULLETIN NO. 21

How to make your own machine and repair parts quicker and easier

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In the vacuum-pourer shown above, the melt is poured into a low-pressure atmosphere in which the molten stream is dispersed—releasing undesirable gases and other substances.

Special alloys, low hydrogen content steels, finished products—available on short notice from Standard

Even in the face of today's extremely critical requirements in metallurgy, Standard Steel Works has maintained its great reputation for quality and service.

With our electric furnace—and the new vacuum-pouring degasser recently placed in operation—we at Standard have facilities in keeping with industry's demands for steel in all applications.

Samples of vacuum-poured steel are tested for gas content in the analytical laboratory apparatus shown above.

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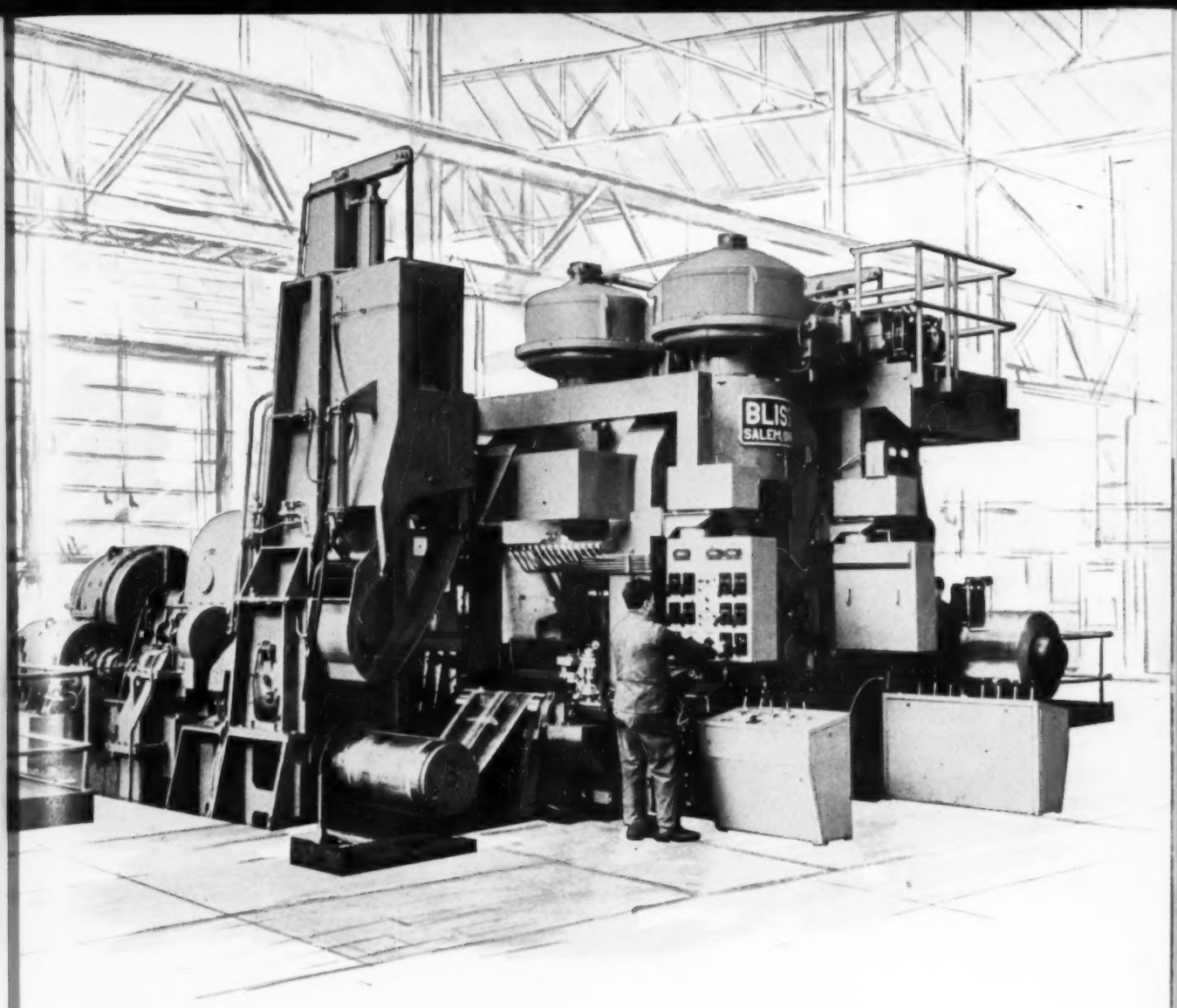

New Bliss reversing cold mill for France's largest producer of brass strip

Near Paris, Compagnie Française des Métaux, France's largest producer of brass strip, rolls brass on its new Bliss 6½" & 30" x 36" four-high reversing cold mill.

The mill, which can attain a speed of 1,000 fpm is equipped with the auxiliaries necessary to produce brass strip of the highest quality, in widths up to 30" and thicknesses as fine as .0028".

The brass thus produced is used throughout French industry... for automobiles... for defense... for hard goods... for jewelry... for the myriad needs of free Europe.

The Paris installation of Compagnie Française des Métaux is the latest of many such Bliss mills being operated throughout the world, rolling all kinds of ferrous and non-ferrous material. To learn of other Bliss-engineered installations, write for a copy of our 84-page Rolling Mill Brochure, Catalog 40-B.

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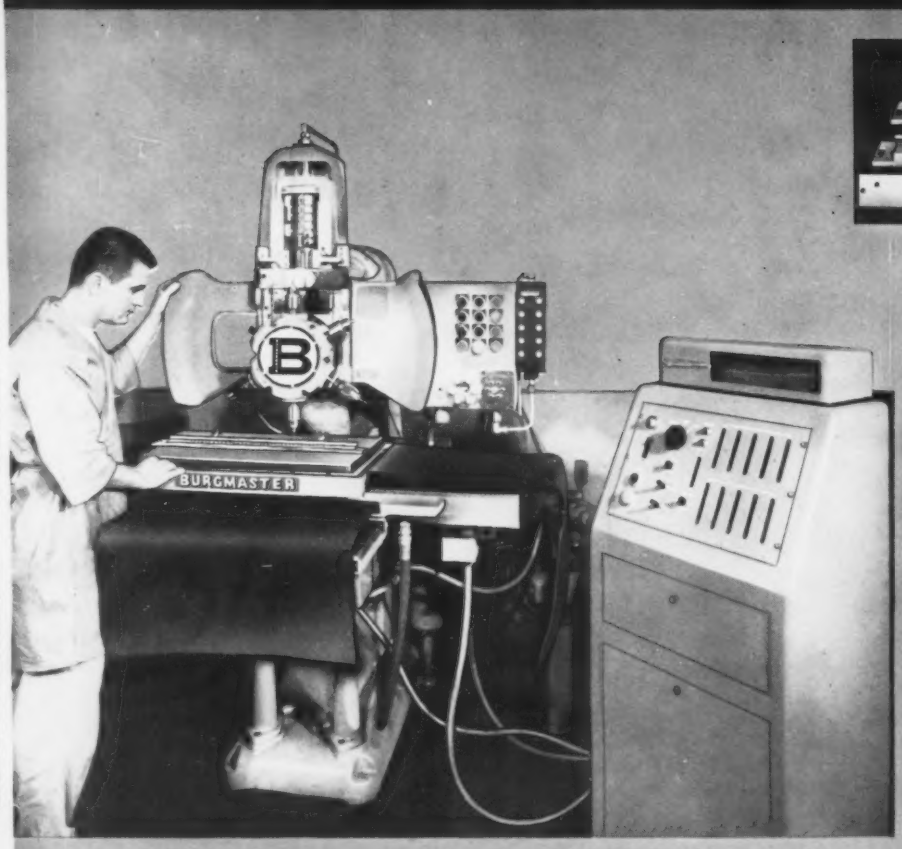
Bliss is more than a name . . . it's a guarantee

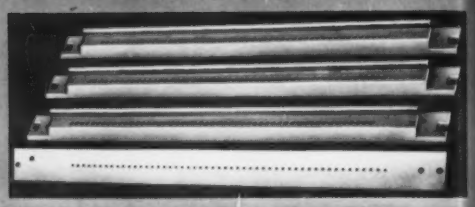
E. W. BLISS COMPANY, Rolling Mill Division, Salem, Ohio

Subsidiary: The Matteson Equipment Company, Inc., Poland, Ohio

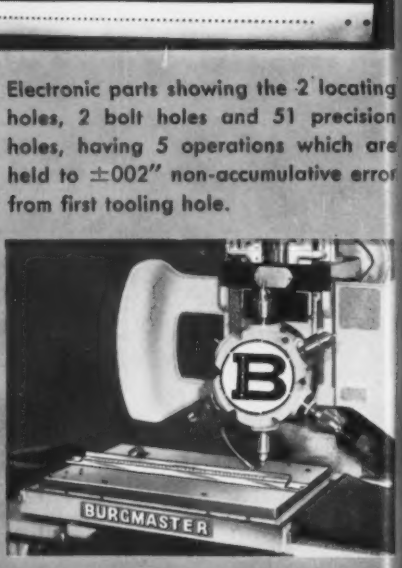
33% More Parts with 50% Less

BURGMASTER tape controlled





Electronic parts showing the 2 locating holes, 2 bolt holes and 51 precision holes, having 5 operations which are held to ±002" non-accumulative error from first tooling hole.



Close-up showing simple standard tools and Fixture used for holding parts while being precision machined on the Burgmaster Tape Controlled Turret Drill.

Programming and Tape Preparation

Parts are programmed by listing the operations, spindle number and X and Y coordinate decimal dimensions in the desired order of machining. This data, in the form of digits, is then punched into the tape in command blocks which include a hole location, the spindle number and any auxiliary function. Programming can be done at the average rate of 1 command block per minute and Tape punching at the rate of 1-4 locations per minute.

Machine Set-up

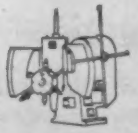
Machine set-up is simple and fast. In this case a sub-base is mounted on the table and locating holes for dowel pins are bored into coordinated positions with the desired hole pattern to be drilled. More complicated parts require holding Fixtures which locate on the table in a center keyway. The average job can be put on the table in approximately 30-40 minutes. Setting the spindle for depth, rapid approach, and rapid return from standard adjustable cams, and mounting chucks, taper sleeves and cutting tools takes about 8-10 minutes per spindle.

Specialists in High Production Turret Drilling

"O" Manual Power Index ¼" Capacity

1C Manual Power Index ⅜" Capacity

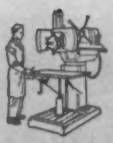
2B Manual Power Index ¾" Capacity



2BF Flange Mounted Power Index ¾" Capacity

2BH Automatic Hydraulic ¾" Capacity

3BH Automatic Hydraulic 1½" Capacity



2BR Ram Type Radial Drill ¾" Capacity

2BHT-3BHT Auto Tape Control ¾" and 1½" C

Labor, $8,000 Fixtures Eliminated

with Automatic Numerical Table Positioning Control

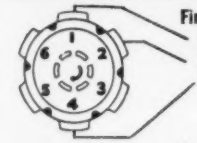
Mechanical Specialties Company, Los Angeles, California, a contract manufacturer of Tooling, Precision Parts, and special machinery, produces 33% more precision electronic parts with 50% less labor and at the same time eliminate the need for 2 expensive $4000 Fixtures. Hand-punched Tape made in their own plant in 2½ hours and a simple holding fixture made in 30 minutes was all that was required to put this job in production. Five operations performed in the 51 holes are held to ±.002 non-accumulated error from the first tooling hole. First the job was run on a jig borer in 6 hours per part. Then it was tooled for Drill press and Milling machine production that required 2 $4000 each Autoindexing Fixtures, 2 men and produced a part in 1½ hours. The Burgmaster Tape Controlled Turret Drill produced the same part in 1.3 hour, and lead time to get into production was greatly reduced.

Maximum Flexible Automation

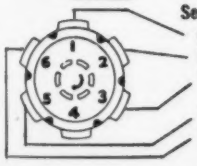
The simplicity, economy and speed with which the Burgmaster Tape Controlled Turret Drilling, Tapping and Boring Machine can be set up to produce a variety of parts with standard tools and simple holding clamps is demonstrated by this job. Set-ups are quickly made from the standard adjustable Burgmaster Controls which include pre-selective spindle speeds, infinitely variable pre-selective feeds, selective rapid approach and return, skip indexing, precision depth control, and simple manual controls for set-up. The numerical control system controls all machine functions, selects spindles in any sequence, automatically positions the table on two axes, clamps the table while machining operations are performed, and controls coolant. Up to six different operations can be performed at any command position without moving the table, or as many cycles using one tool as desired, without indexing. All operations are carried out at their most efficient rate for high finish, precision, speed, and longest tool life.

The savings that can be realized from Automatic Tape Controlled production on small lots or high production is tremendous. Why not get all the facts on your work? There is a Burg direct representative near you. Call him—there is no obligation.

How the Job Is Run



First Operation	Diameter
Center Drill	4 holes
Drill 4 holes	5/16
Ream 2 holes	.312 +.0002, —.0000



Second Operation	
Center Drill	51 Holes
Drill 51 holes	#138
C'Bore & Chamfer 1/32" x 45°	—.250x3/16 Deep
End Mill	.156 +.000, —.002
Ream after plating	.1562 +.0005, —.0000

NOTE: Because the table Travel is only 26" long and the part 27" long, it was placed on the table in a diagonal position for machining the 2 Dowel holes, and 2 Bolt holes in the First operation.

Machine: Burgmaster Tape Controlled 6 spindle Turret Drill
Parts: Electronic precision parts
Material: Heat treated steel
Tape Preparation Time: 2½ hours
Machine Set-up Time: 2 hours
Holding: Simple fixture with 2 clamps and 2 dowel pins
Accuracy: 51 holes ±002" non-accumulative error
Former Method: 1st method—jig bores
2nd method—Drill press, Milling Machine, 2 $4000 autoindexing fixtures and 2 men
Former Time: 1st method—6 hours per part
2nd method—1½ hour per part
Present Time: 1.3 hour per part—Floor to Floor
Savings and Advantages: 33% more production, 50% less labor, 2—$4000 Fixtures eliminated, lead time greatly reduced

Write for bulletin describing Burgmaster 6 and 8 spindle Automatic Hydraulic Turret Drills in detail. Twenty-minute 16mm sound film showing Burgmaster turret drills in operations, including, the new automatic positioning table, available from any office.

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Completely new, this modern plant represents a major step in our corporate expansion program. It provides the finest facilities, production skills, engineering and metallurgical experience. It conforms to the policies maintained throughout our 75 year history, to constantly strive for highest quality standards in our products.

Customer oriented throughout, personnel and equipment are geared to meet the needs of our customers. Large stocks of finished coils are maintained at all times for prompt delivery.

UNIVERSAL CYCLOPS
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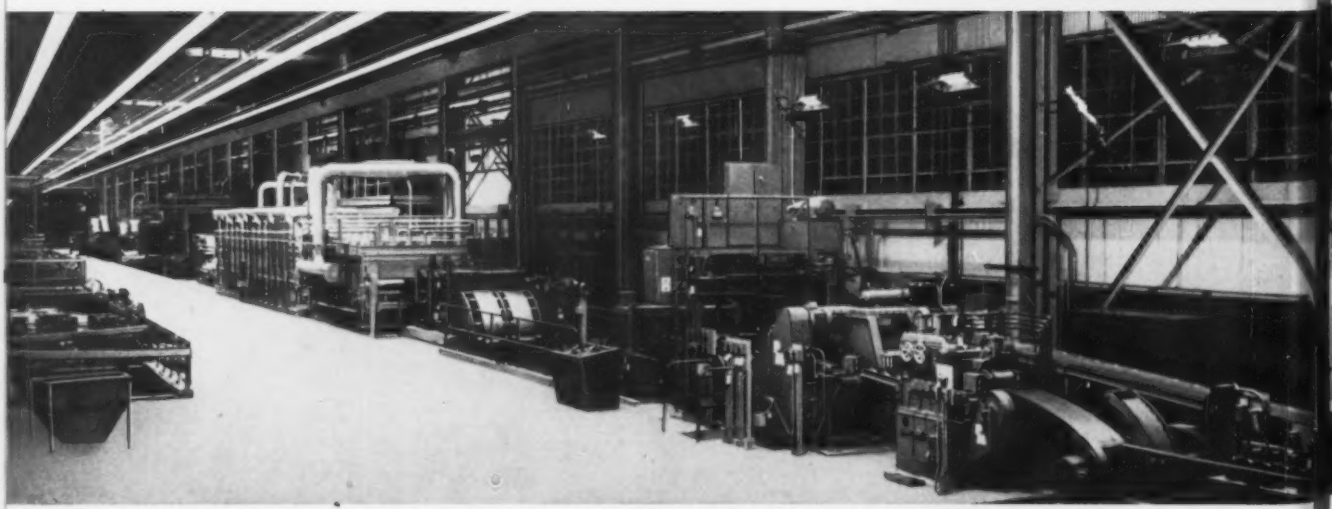
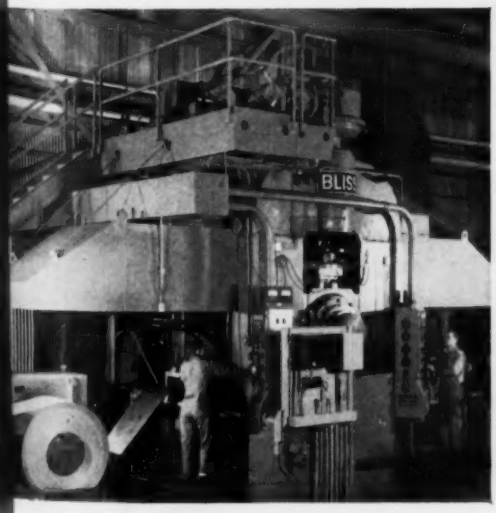
TOOL STEELS • HIGH TEMPERATURE METALS



The most modern annealing and pickling line in the industry—over 600 ft. long. Handles two coils up to 24" width.

ds Stainless Strip Capacity



Modern four-high cold rolling mill.

Temper mill provides top quality finish.

Large stocks of stainless steel coils—assure prompt delivery.

12 B&W IFB lined single stack annealing covers in use in the strip annealing department of Weirton Steel Company, a division of National Steel Corporation, at Weirton, West Virginia.

WEIRTON STEEL COMPANY uses lightweight B&W Insulating Firebrick for single stack annealing covers.

These 12 covers, lined with B&W K-20 Insulating Firebrick, have been in service more than two years in the annealing of low and high carbon strip from Weirton's 54″ strip mill. Identical in construction, the covers are over 17 feet from base to skew and over 10 feet in diameter. The domes are of 9″ K-20 IFB construction.

The K-20 is one of B&W's *lightweight* Insulating Firebrick. In fact, B&W K-20 IFB are at least a third of a pound lighter than other 2000 F insulating firebrick. This means savings in the overall weight of portable covers. Additional savings in fuel consumption and cycle time are possible because lightweight B&W IFB store and conduct less heat. Heat is kept in the furnace, not in the lining.

This application points out advantages of light weight in insulating firebrick constructions. And B&W makes the *lightest* weight insulating firebrick. Consult your B&W Refractories Representative for information on how you can profit with lightweight B&W IFB.

Bulletin R-2-H available on request.

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R-612

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Finkl vacuum degassed steel promotes high density centers in large die blocks, therefore reducing the possibility of a late shipment because of ultrasonic rejection.

Finkl was first with die blocks fully water quenched. Finkl was first with deep hardening nickel-chrome-moly die blocks, the forerunner of the AISI 4300 Series. And now, we are pleased to add vacuum degassed steel die blocks and hot work die steels to our line of products—another Finkl First. They represent our policy of offering our customers every advantage to reduce costs and increase production.

For over 80 years we have produced quality products because we believe sincerely that the "best costs the least" in the long run. For impressions that last you can depend on Finkl.

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Bertsch & Co. finds solution to lubrication problem–

RYKON

Centralized lube system pumps grease through 80 ft. lines in cold temperature; no clogging

Problem: Bertsch & Company, Cambridge City, Indiana, makes pinch rolls and other metal bending equipment. Some Bertsch pinch rolls bend plates 4¼ inches thick by 16 feet wide for use in atomic submarines. Bearings on this big Bertsch machine share a bending pressure of 4.2 million pounds. A centralized lubrication system used on one pinch roll model had to pump grease 80 feet. Greases tried could not be pumped this distance without clogging lines. Since machines are shipped all over the world and are often in operation in cold climates, Bertsch had additional problems. The grease had to be

Sons of founder. Harry E. and Robert O. Bertsch talk with Standard Oil lubrication specialist Donald M. Simmons. Don is well qualified to work with customers on difficult lubrication problems. He has the training and experience for it. Don graduated from Purdue. He has 7 years service with Standard, has completed the Standard Oil Sales Engineering School.

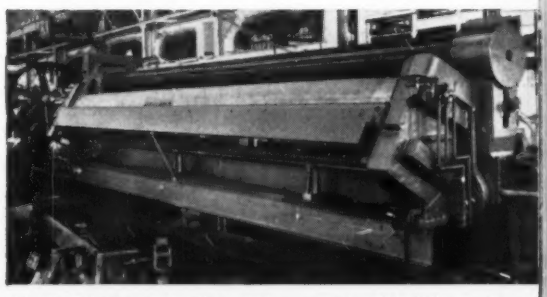
with Standard Oil's

Grease R

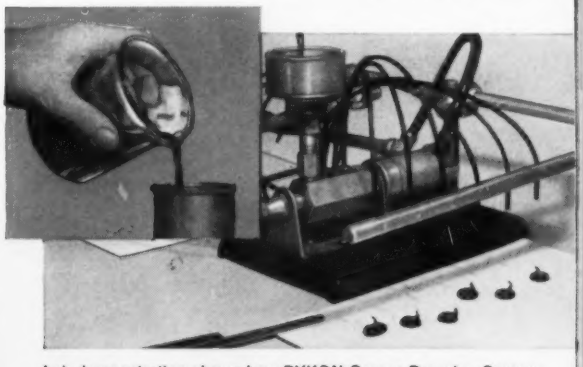
pumpable in cold temperatures. It had to be foolproof so that customers beyond the reach of service calls would experience no problems. Equipment had to uphold Bertsch's eighty year reputation.

What was done: Bertsch turned to Standard Oil for help. They have been customers of Standard's for 69 years, so the move was logical. And Standard Oil man, D. M. Simmons had the answer. RYKON Grease R. This is a rheopectic grease, one that flows like an oil. Its rheopectic properties cause it, under slight shearing stresses, to turn to a thick, durable grease. RYKON Grease R flows as a fluid to the pump through the equipment's central lubrication system. There it lubricates the bearings as a grease.

What you can do: Maybe you manufacture equipment that needs a centralized lubrication system and you have been looking for a grease like RYKON R. Maybe you operate equipment with centralized lubrication systems. Then you need to know about RYKON Grease R. Get the facts from your nearby Standard Oil lubrication specialist anywhere in the 15 Midwest and Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois.**



A Bertsch 80 ft. pinch roll, largest on record. RYKON Grease R is used in the central lubrication system of this giant unit.



Lab demonstration shows how RYKON Grease R works. Grease is poured into reservoir as a fluid. The shearing action exerted by pump and outlets irreversably converts fluid to a grease. Grease is ejected from outlet lines as in lubrication system.

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Our customers seem to like this idea. And they include the most respected names in American industry. So, when you want to take a work load off your shoulders, put it on a Federal Ball Bearing. Our catalog lists over 12,000 ball bearing sizes, hundreds of types. Send for it.

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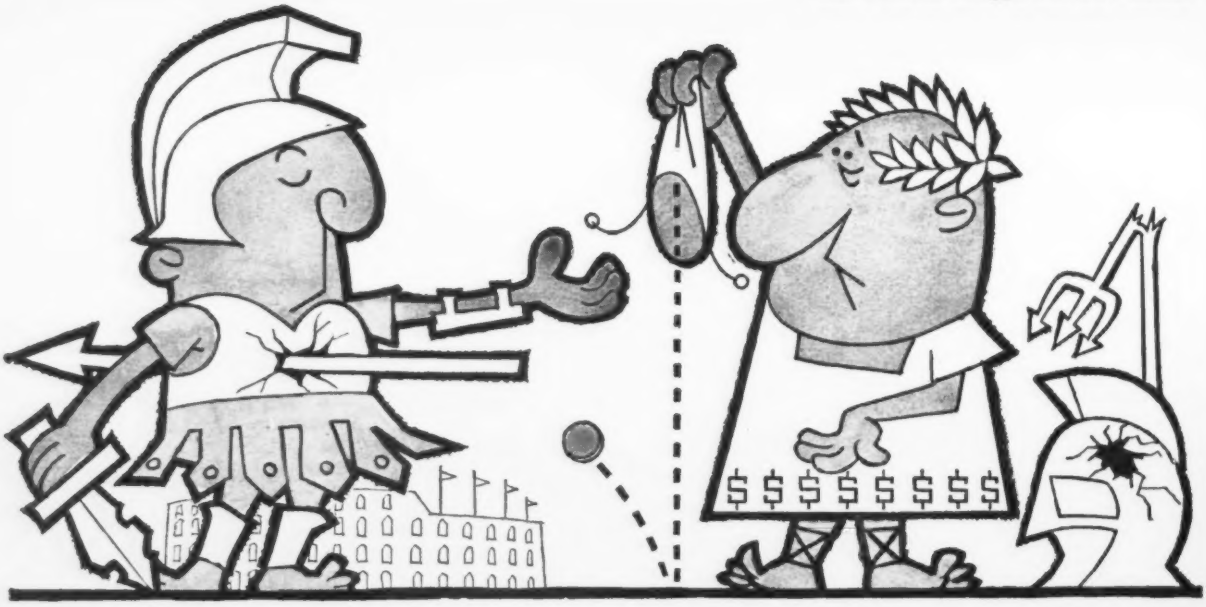

WITH ALL THE COSTS OF DOING BUSINESS RISING STEADILY, PROFIT IS MORE ELUSIVE THAN EVER!

How long can the cost of "getting new equipment to work right" be buried in overhead?

No matter how attractive the original price of the equipment, it's false economy if the price tag *did not* itemize the extra money required to get it into production!

To your great responsibility for improving manufacturing processes has been added an *extra* concern for that old standby, catch-all type goodfellow called "overhead".

Overhead can no longer afford the labor and hard, cold cash-money often needed to make new equipment operate properly.

Sciaky knows about "overhead", too. That's why Sciaky resistance welding and production equipment is built to satisfy the requirements of *your* particular application. That's why Sciaky equipment is thoroughly tested and proved to do that particular job *before shipment.*

The result protects the profit your manufacturing operations can earn by (1) providing only the right equipment at the right price, (2) minimizing the lost time and cost of production try-out, and (3) minimizing rejects and costly re-working.

Why take less than the full advantage of consulting with a Sciaky Application Engineer the next time you are considering equipment. No obligation, of course.

A successful manufacturer of double-bowl kitchen sinks took that advantage. As a result, they replaced the previous high-reject, unprofitable method of fabrication with Sciaky resistance welding equipment. Within only ten days of installation, over 10,000 sink units were produced with less than a 1% scrap factor. Write for "Resistance Welding At Work", Volume 4-No. 6 for the details.

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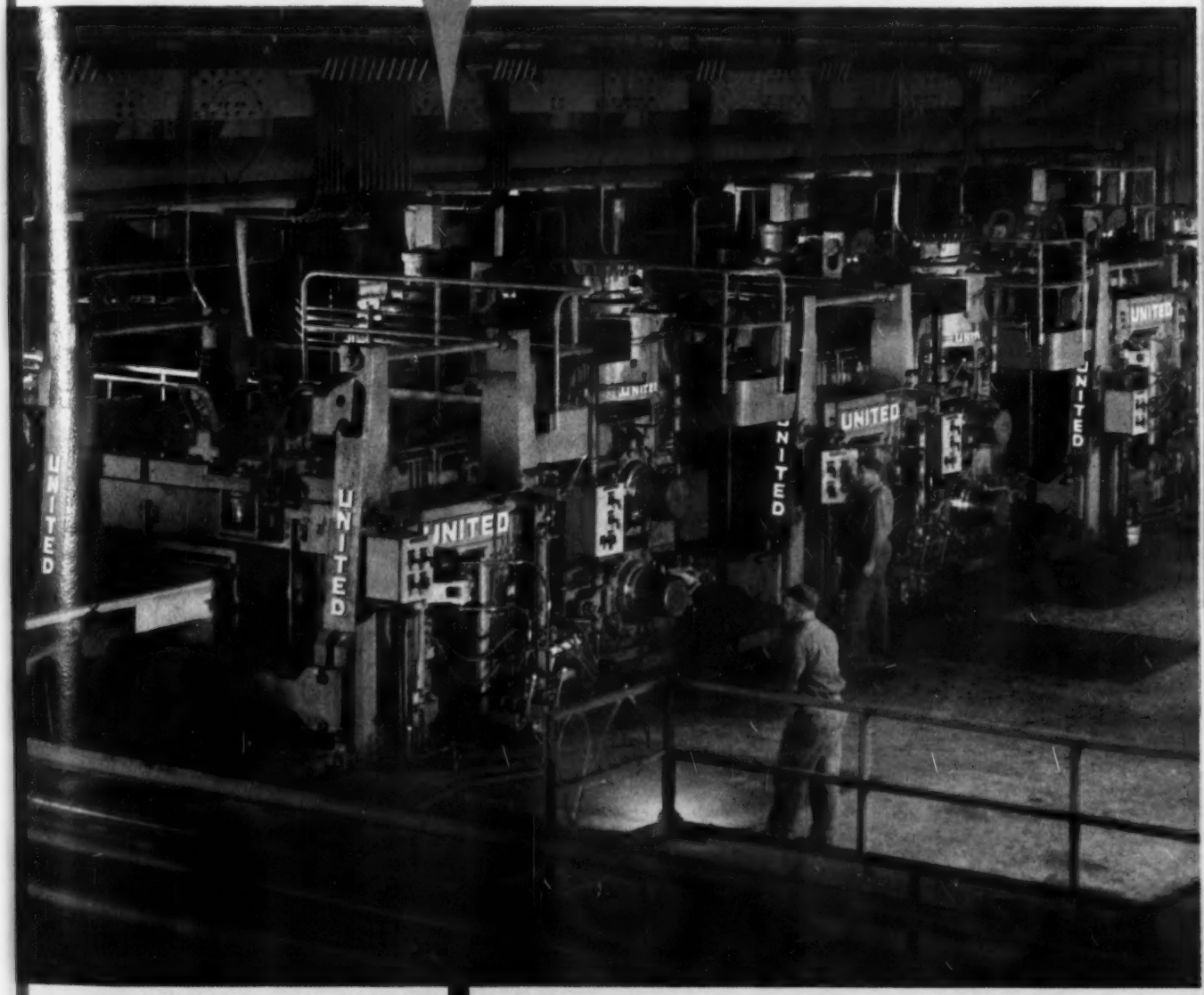

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SUBSIDIARIES: Adamson United Company, Akron, Ohio; Stedman Foundry and Machine Co., Inc., Aurora, Indiana

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more types and tonnage in stock at RYERSON than anywhere else

In spite of heavy demand, we are currently able to meet most steel requirements. And in a period such as this, as always you can count on Ryerson to maintain its regular policy of fair prices and to furnish steel that is always of high, uniform quality.

As this is written, we can only hope that mill production will not be halted by a strike. But if a strike does develop, we are confident that our large and diversified stocks will enable us to serve more of our customers better—and for a longer time—than in any comparable period in the past.

STEELS IN STOCK

CARBON STEEL BARS—Hot rolled and cold finished—round, square, hexagon, flat, etc.

STRUCTURALS—Channels, angles, beams, etc.

PLATES—Forming and welding, flange and firebox qualities, high carbon, E-Z-Cut, etc.

SHEETS & STRIP—More than 20 types

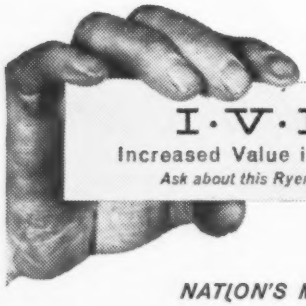
TUBING—Seamless and welded mechanical, hydraulic cylinder and fluid line, structural, etc.

STAINLESS STEEL—Sheets, plates, bars, tubing, pipe and fittings. 15 types, standard and aircraft qualities.

ALLOY STEEL—Case hardening, direct hardening and heat treated, Rycut leaded alloys, aircraft quality alloys, etc.

CONSTRUCTION STEELS—Re-bars, spirals, wire fabric, post-tensioning open web joists, etc.

TOOL STEEL—Water and oil hardening.



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STEEL SETTLEMENT WITHOUT A STRIKE is a distinct possibility. Labor and company negotiators are getting down to cases. Bargaining atmosphere has improved. Settlement would be non-inflationary. Only last-minute haggling and bumbling could upset applecart.

IF A STRIKE COMES, method of shutdown will give a hint on how long a strike the mills expect. If mills bank blast furnaces and keep openhearths heated, it will mean they hope for a quick ending. But if furnaces are cleaned out and sealed, it will indicate companies are set for a long shutdown.

AN OLD DREAM OF STEELMAKERS may soon be commercially practical. Republic Steel Corp. announces a new powder metal process whereby quality steel strip is produced from iron ore without intermediate steps of melting and blooming. More work lies ahead.

LOOK FOR ALUMINUM PRICE RISE by the fourth quarter. The rise would restore part but probably not all of the two-cent price cut of some months ago. Producers are still working under a voluntary price freeze until July.

ECONOMIC UPSURGE has produced a record annual rate in personal incomes. Commerce Dept. reports the new high mark of $376.2 billion was set in May. It was $3 billion above previous month.

TAX CUT TALK should be taken with a grain of salt. Administration bigwigs are talking hopefully along this line. But defense and domestic spending outlook offers little encouragement.

HELP FOR DEPRESSED COAL INDUSTRY is in the cards. A bill creating a new three-man government agency to find ways to help the industry is expected to clear Congress. Its mission: Find new methods of marketing, new uses, improved mining methods.

LONG-TERM SCRAP CONTRACT proposal may be submitted to Justice Dept. for an opinion. Scrap dealers have offered to supply three Eastern mills 50,000 tons over six months. Price would hold over life of contract. Companies fear antitrust law complications.

AUTO HEAD LAMP AND LICENSE HOUSINGS are now being stamped from coils of galvanized steel sheets. This makes a one-step operation compared with five or six handlings by previous method: Drawing from cold-rolled sheets followed by electro-zinc plating or coating. New product is said to offer greater protection against corrosion.

32 Clevelands keep 450-ton ladle cranes on the job at Geneva Works

Moving big tonnage up and down, forward, backward and sideways is all in a day's work for 32 Cleveland built-in drives installed on the bridge and hoist of these 450-ton ladle cranes. These and many other Cleveland Worm Gear Drives and Speed Reducers can be found throughout the mill driving pushers, levelers, edgers, conveyors and other cranes.

Because of their established "long-life" service records, Cleveland drives are recognized leaders for keeping maintenance and replacement costs to the absolute minimum. Contact a Cleveland Field Engineer, or write for Bulletin 145 describing how Cleveland Worm Gear Drives solve tough production problems and reduce maintenance costs.

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Drives

What Most Workers Expect From Their Foremen

It might come as a surprise, but worker job wants are similar to the foreman's own.

Here is a guide that can help foremen do a better supervising job.—By H. R. Neal.

▪ An image is emerging of a good foreman from the employees' point of view.

After 10 years of interviews and questionnaire-filling by hundreds of thousands of workers, Dr. Robert L. Kahn, of the University of Michigan's Survey Research Center, has pieced together a composite picture of a good foreman and translated it into a simple phrase: A good foreman is one who helps the employee achieve his goals.

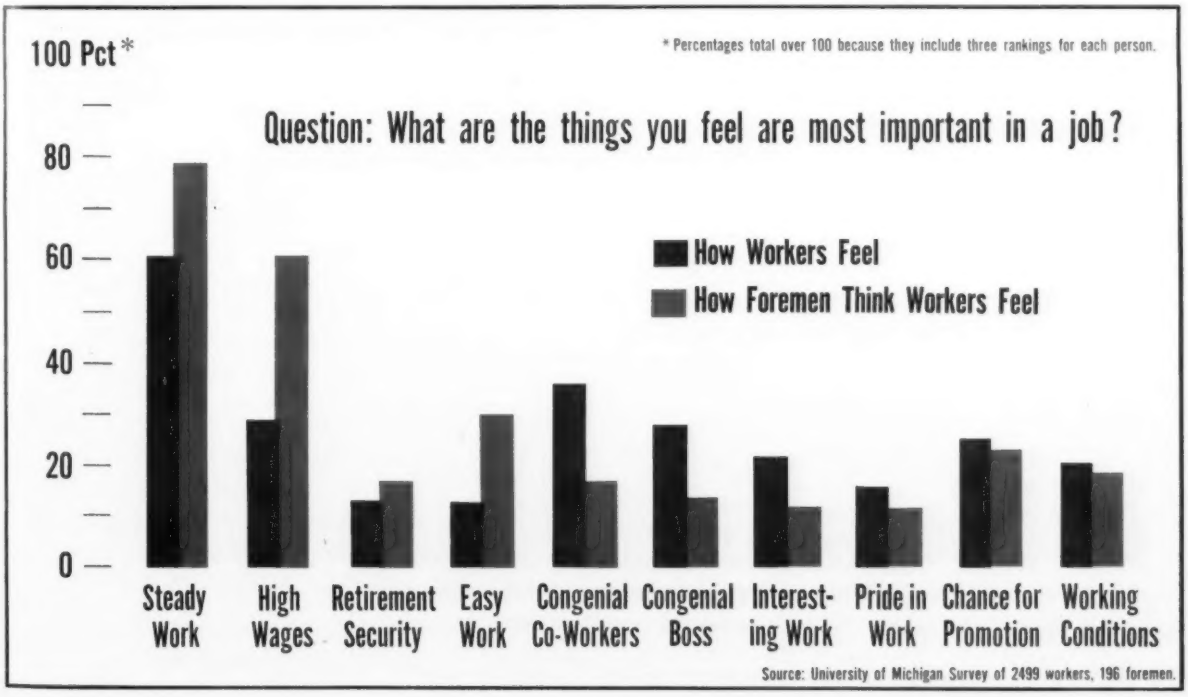
What Workers Want—The goals vary from worker to worker. But generally, steady work and wages rank first among worker wants. Getting along with others on the job, promotion opportunities, interesting work, and good physical working conditions also rank high (see chart).

Some of these goals are beyond a foreman's authority, Dr. Kahn notes. Everyone cannot be promoted, nor can everyone be assigned to more interesting jobs.

What They Can Get—"The supervisor cannot play Santa Claus 12 months of the year, especially since the limitations of hierarchy and the rules of collective bargaining may combine to make his sack of gifts modest indeed," explains Dr. Kahn. "Nevertheless, the manager can satisfy directly and unconditionally some of the needs of his subordi-

Why Foremen and Workers Don't See Eye-to-Eye

Survey Demonstrates Misunderstanding of Worker Thinking



nates."

Short of pay raises and promotions, he can:

1. Provide direct satisfaction of other needs of workers.

"Most workers have a real need to be approved and accepted by people who have authority over them. To the extent that the supervisor behaves toward his men in a warm, supportive fashion, some of their needs will be met directly on the job."

2. Enable workers to achieve their own goals.

"When a manager improves the planning of work for his group, or eliminates some production bottleneck, or removes some other barrier which prevents workers from achieving their goals, he is performing this function. Much of the technical part of his work will fall in this category."

3. Define the way for workers to achieve their goals.

"Whether or not he intends to do so, the supervisor does a great deal to define for his subordinates the way which they believe leads to goal achievement. The worker is quick to assess whether a supervisor makes recommendations for promotion on the basis of favoritism, special training, performance on the job, or some other set of values."

4. Modifying worker goals.

"While the goals of many workers are established very early in their lives and may not be greatly influenced by foremen, in some cases supervisors can have an important part in making workers aware of new goals such as promotion."

"Each of these steps," says Dr. Kahn, "can contribute both to increases in employee satisfaction and productivity."

Need for Understanding — However, there is no reliable evidence to show that popular supervisors are necessarily in charge of productive units, he points out. But strong foremen tend to produce "company-motivated" workers rather than union-centered workers.

Most of the workers' opinions about management are strongly influenced by their relationship with their supervisors. To them, the foreman is management. It is vital that foremen know their workers. But, according to Dr. Kahn, foremen don't know their workers as well as they believe.

His survey shows foremen tend to underestimate the workers' motivations. This leads them to exaggerate the differences between themselves and their men. (See chart.)

Missing the Mark—The foreman consistently overestimates the importance of dollars and ease of work for the men, just as he consistently underestimates the importance of interpersonal relations. He comes closer, but still underestimates, the importance workers place on promotion opportunities and good physical working conditions.

Ironically, Dr. Kahn's study shows the same situation prevails in the relationship between foremen and general foremen. There is an almost direct parallel between what the foremen believe their workers want and what the general foremen think the foremen want from their jobs.

Goals Are Universal—Yet there is a striking sameness between what the workers, foremen, and general foremen say are actually the most important factors in their jobs.

Dr. Kahn's study suggests that by attributing his own goals to those of his workers, a foreman can come fairly close to understanding what makes his men tick.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.

Let Foremen in on Policy

▪ New labor-management agreements usually mean new problems and grievances. In the past year this has been doubly true. Industry drove some hard bargains with labor. A post-recession development has been a sharp increase in grievance and arbitration cases.

For these and other reasons, many companies have developed industrial relations training programs for supervisors. A survey by Associated Industries of Cleveland shows that the emphasis in new training programs is on labor-management agreements.

His Basic Job—"A good foreman should first of all know his job. He should recognize feeling. He should be helpful. These are all part of his basic job of getting out production," says AIC. "And in doing this he must also be concerned with costs, quality, and service. And to these elements must be added another imperative: The supervisor must understand the labor-management agreement."

One way to make sure foremen understand company labor policies is to give them a chance to discuss them openly prior to negotiations. AIC suggests this would help company negotiators as well as the foremen because "foremen often have the kind of experience in regard to contracts and policies which executives lack."

Matter of Interpretation—Often, the contract is what the foremen say it is. Interpretation is based on "shop law" established by the foremen, AIC says. Agreements reached by management and top union officials are often changed from the original intent through the interpretations and actions of supervisors.

Steel Labor Settlement Forecast

Chances Good for Peaceful, Non-Inflationary Pact

Bargaining atmosphere has improved greatly as talks enter the home stretch.

Only last-minute haggling and bumbling could upset the apple cart.—By Tom Campbell.

1959's Union-Management Crisis

▪ Steelworker Dave McDonald and the steel industry representatives will soon sign a non-inflationary wage agreement providing for modcrate wage or fringe benefits in time to ward off a strike—unless last minute haggling and bumbling cause a shutdown.

Both sides are bowing—and making their contribution—to President Eisenhower, who has used the full force of his office to insist on an agreement which will not bring a steel price increase. If anything happens at the last minute to cause a ditching of present attitudes on both sides, a long and bitter strike with overtones running years ahead will result.

A Prediction—But The IRON AGE believes a satisfactory settlement without a price increase will be reached in time to stave off a crippling strike. Final debate on the give-and-take will not wind up very much before the contract deadline on June 30. But the "word" will be out to the mills before that.

Since mills usually shut down or slow up over the week-end (in the openhearths and to some extent in the finishing mills) the problem of an orderly closing of the mills in case there is a last-minute hitch is not too bad this year. June 30 comes on Tuesday so mills could just extend their curtailments from the week-end if the signals were to that effect.

Better Atmosphere — Last week the atmosphere between the labor and steel company negotiators was the best since they shook hands for the TV cameras some weeks ago. Although the language used in press conferences was anything but Rudolph Flesch's simple language approach, there was enough to indicate a shift of positions by both sides.

The steel industry and labor will both have won a large slice of comfort with a non-inflationary settlement (a settlement which calls for no price increase.) Dave McDonald will exercise a strong hold on the union. The union's Wage Policy Committee has given him the blank check he needs.

New Era Ahead—The steel side has held firm as a rock and has attempted to institute a new type of collective bargaining. To call it Boulewareism (derived from a technique used at General Electric whereby a single offer is made and management sticks to it through thick and thin or until new facts are developed) is a little too early. But that there is a new era ahead in steel bargaining techniques goes without saying. It must stand the test of time before any evaluation may be made about it.

The current meetings between steel representatives and the plant union people from the 12 steel firms have been much softer and friendlier than were some of the meetings at the start of negotiations. This, too, showed a shift in the cold front maintained by the four-man steel negotiating team led by R. Conrad Cooper, U. S. Steel vice president.

Union Headaches — The union chiefs had—and still have—their troubles because they refused to recognize that there is now a new deal on in steel collective bargaining.

The non-inflationary agreement to be reached next week—unless present plans backfire — will certainly be only a breathing spell from the union's standpoint. It is likely that it will be for two years. This will take both steel management and Dave McDonald off the hook of going through a rough-and-tough session in a presidential election year.

Political Problems—If Dave has to go through another session like this one again next year, it might upset his chances at the union polls in 1961 when he will stand for reelection. Similarly if the steel firms had to go through the dance again next year in an election year they would have two presidential candidates on their backs to say nothing of cabinet hopefuls, Senators, and Congressmen. Thus it is the better part of valor for both sides to postpone their warfare until after Dave is reelected and until we have a new President in the White House.

The market effect of a price freeze and a non-inflationary wage increase will be substantial. Many orders, while not cancelled, will be "pushed over" into the future. But the decline in output with no steel strike—or with only a token one —will not be as great as previously feared. The economy has picked up strongly and much of the steel stocks have been used—or will be used. Also the sharp upsurge in auto sales is better than expected.

Direct Reduction Moves Closer

Republic Goes From Ore to Strip Without Melting

Elimination of melting furnaces—age-old dream of steelmakers—may soon be commercially practical.

Laboratory samples of new product pass rigid stamping test.

▪ Direct reduction—from iron ore to steel strip without melting—moves a step closer to commercial reality with announcement of a new powder metal process to do the job. Disclosure came last week as Republic Steel Corp. dedicated its new research laboratory near Cleveland.

The new process takes three steps. First, iron ore is highly purified and reduced to metallic iron powder. This powder is then fed from a hopper through rolls which compress it into a fairly thick "green" strip of about 75 pct density (see cut).

Strip Is Sintered—Finally, the green strip moves through a reducing atmosphere furnace at 2200°F and on through a series of hot strip rolling stands. It emerges from the last stand at the full density of hot-rolled strip.

At this point it has the same quality as conventionally-made steel. As proof of this the hot-rolled strip has been pickled, cold rolled, and annealed. Then, in a demonstration at the lab, it was fed to a punch press fitted with a difficult General Motors type test die.

The result is a stamping which can't be distinguished from one made of conventional low-carbon strip.

The Big Bypass—The new method bypasses the coke oven, blast furnace, openhearth, and blooming mill. No one expects it to put those units out of business—not in our time.

But what it could do is permit expansion of steel capacity at less than half the conventional figure. A direct reduction plant can be built for 50 to 60 pct of the cost of coke ovens and a blast furnace. That latter figure today would run to at least $60 million. Then there is a further saving by eliminating the blooming mill and openhearth.

Cost-cutter—This much appears to be fact: Direct reduction will be **at least** competitive with conventional steelmaking. And there is no sacrifice in quality.

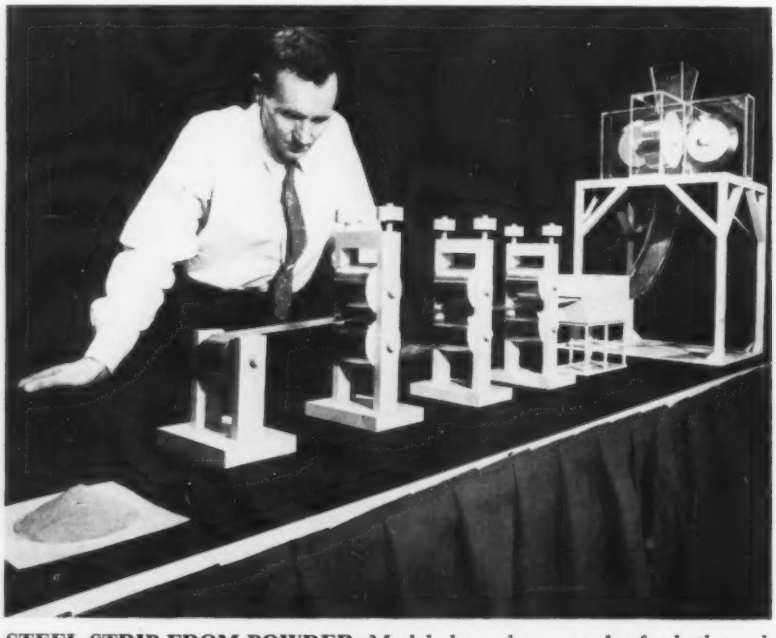
Peter Robertson, Republic's vice president, research and planning, showed the process at a press conference at the lab last week. He noted that production of 1800 lb of strip to date was a laboratory process. Next step, he said, will be a pilot plant. That should be rolling in two or three years.

No Major Problems—Mr. Robertson admitted that there will be problems. "But," he added, "none we don't feel we can solve." Progress to date has taken nearly 10 years. Assuming no major pilot plant problems, commercial production is probably 5 to 6 years away.

Naturally, the whole thing hinges on cost. Republic is not alone in the industry in attacking direct reduction. Yet few, if any, steel companies have more direct reduction experience to draw upon.

Commercial R-N—The R-N direct reduction process, a joint venture with National Lead Co., is now moving from the pilot plant to commercial production. It makes a substitute for hot metal or scrap.

Republic has been making iron powder at Toledo since 1955. It ran a direct reduction plant at Warren, Ohio, during World War II. Later, at Cleveland, it tried a combination of chemical low grade ore purification and direct reduction.



STEEL STRIP FROM POWDER: Model shows how powder feeds through rolls, upper right, through sintering furnace and roll stands.

GOLDEN DOME: Aluminum geodesic dome erected in Moscow is the largest of its kind in the world.

Aluminum Dome Dazzles Reds

▪ There was no shortage of onlookers when a Russian crew, with American direction, erected the world's largest aluminum geodesic dome in Sokolniki Park, Moscow. Comrades came to stare at the gold-anodized dome. Radio Moscow interviewed Robert Richter, American engineer, and translated it into 78 languages. Mr. Richter was widely quoted in the technical press. Tass news agency covered for newspapers. And the USSR Construction Bureau assigned two men to cover the project. To top it all off, Nikita Khrushchev, head Russian, dropped in to see for himself. The 200-ft diam dome was developed by Kaiser Aluminum & Chemical Corp. to house an American national exhibit this summer, Aug. 2 to Sept. 13.

Students from Moscow U., and officials of the USSR Academy of Construction and Architecture were also frequent, though unofficial, visitors during most of the two weeks it took to assemble the dome.

HEAD MAN: Soviet Premier Nikita Khrushchev visited the U. S. aluminum dome with U. S. Ambassador Llewellyn Thompson (on his left) and Howard Messmore, deputy American Chief of the exhibit (in black hat).

Inventories Are Far From Safe

At their annual meeting, most purchasing agents admitted they have not been able to rebuild large material stocks.

Operating rates have outrun original estimates.

▪ "This damn prosperity is ruining my inventories," joked one metals buyer at the National Assn. of Purchasing Agents' annual convention in New York last week.

He was referring to a problem plaguing many purchasing agents today. Despite strenuous efforts to anticipate a steel strike many plants are watching high order volume eat into what was planned as a strike reserve. Most firms aimed at 45 to 60-day inventories; many now are down to 30 days.

Strike Would Hurt—"A long steel strike would force many of our members to shut down," reported A. C. Ruediger, purchasing agent for Carrier Corp. and new chairman of NAPA's steel committee. He predicted most metalworkers could weather a 30-day steel shutdown, except for spot shortages. Assume a two-week vacation period, and the 30 days become 45. But relatively few companies could last much longer.

"I was worried our inventories were too large," said the buyer for a large automotive supplier in Chicago. "But then we got a phone call from Detroit, and we jumped from one to three shifts." Such sharp jumps are frequent.

Some companies plan to turn to service centers in the event of a long strike. But warehouses have warned they will concentrate on regular customers. And some of the largest warehouse systems are mill-owned, will themselves close if the United Steelworkers go out.

Product Mix—Inventory for both consumer and warehouse varies by product. Greatest danger appears to be in sheet and strip, especially galvanized. Bar stocks are almost universally robust, but tightness in pipe and tubing has some buyers worried. One tube mill representative at the convention said many warehouses have been slow stocking up on this product line. With the current upsurge in pipe orders at the mills tube stocks should be money in the bank for both users and service centers, strike or no strike.

Mixed emotions were very apparent among structural users. Fabricating business has slumped badly. But some of the biggest shops are steel mill subsidiaries and will shut up tight in event of a strike in basic steel. Purchasers for some construction companies cannily ordered early delivery of structurals, are sitting on stocks ample for the jobs in hand. Others, principally for lack of space or money, have been forced to stay delivery until steel is actually needed at the job site. For the latter a strike could ruin schedules.

Little Guy Hit Hard — Despite some exceptions, mills' small customers are apparently in worst shape. Steel involves a large percentage of their working capital. Buying, even hedge buying, must necessarily be cautious.

If there is no strike, or only a short one, few P.A.s will have many regrets current inventories are not too much over "normal" stocks. They now concede that inventories in '58 were dangerously low, should have been substantially built up even without a strike threat.

Aluminum Picture—"Aluminum buying has picked up sharply, but, as far as we can tell, little of it is hedge buying. In most cases, customers realized it just wasn't safe to let metal stocks get so low," Thomas O. English, general purchasing agent, Aluminum Co. of America, and new president of NAPA, told The IRON AGE.

ELECTED: New president of the National Assn. of Purchasing Agents, (r.) Thomas O. English, Aluminum Co. of America, gets a few hints from the outgoing president (l.) Gordon Affleck, PA for the Mormon Church.

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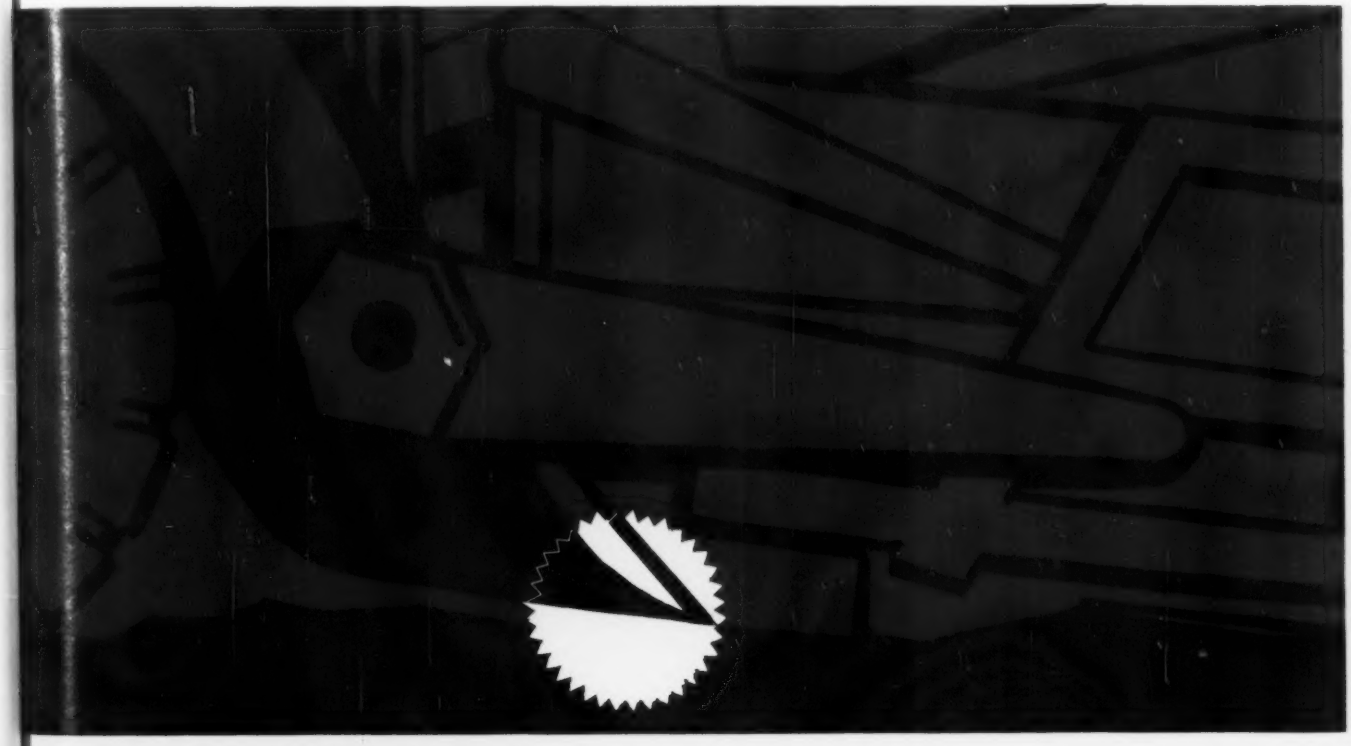
AMBALLOY TAKES ON TOUGHEST TERRAINS



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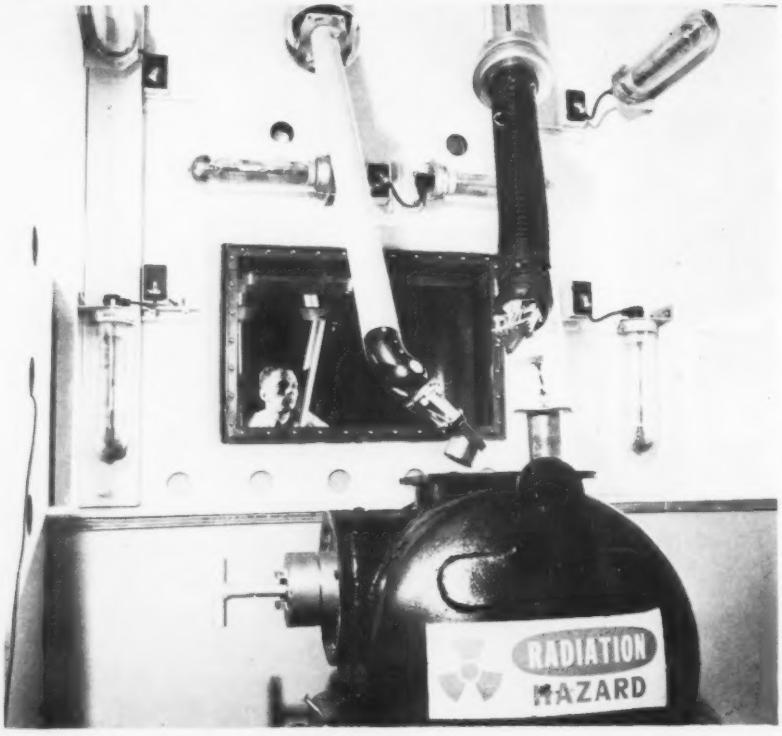


SLAVE DRIVER: Safely behind five feet of glass, a technician at the Picker Research Center, Cleveland, loads a radioactive isotope charge into its lead container. The new lab, built by Picker X-Ray Corp., is the nation's largest non-government installation for storing, processing and studying radioisotopes, and research in radiation and X-ray.

Marketers Optimistic, But Fear Imports

Marketing men talked mostly about the growth of their activities, and the possibilities in the 1960's, at the American Marketing Assn. 42nd annual convention in Cleveland last week.

But questions from the floor indicated the audience was principally worried about imports throwing a monkey wrench in their forecasts.

Biggest new look in marketing tools coming up is electronic machines, punched card systems and similar step-ups aimed at more speed and efficiency. The Dept. of Defense is currently extending its procurement program to use electric accounting machine methods to file microfilmed drawings and plans.

Defense Says—"This makes the many millions of plans more readily available on short notice and permits broader solicitation of companies desiring to bid," says R. B. Whiting, economic advisor to the Assistant Secretary of Defense for Supply and Logistics. Coding of research and development capabilities for punch card sorting is also being started. Utilities like Cleveland Electric Illuminating Co. have industrial accounts broken down into standard industrial classification code numbers, and marketing efforts are directed according to business activity.

Operations research is also into marketing with both feet. John F. McGee, Arthur D. Little, Inc., Cambridge, Mass., said marketing areas which can be helped are pricing policies, measuring advertising effectiveness, timing and locating plant expansions, and analyzing distribution, and new products.

Missiles Look Good—Missiles, of course, are fertile fields for marketing men. Dr. Murray L. Weidenbaum, of Boeing Airplane Co., Seattle, said Defense Dept. purchases currently account for 10 pct of the total output of the U. S. economy.

Business Looks Good Says Campbell

Business for the rest of the year is likely to be "more than good," The IRON AGE Editor-in-Chief Tom Campbell told members of the Drop Forging Assn. this week.

"Joe Doakes is on a spending spree," he said. "Last year he was paying off bills, salting his money in the sock or bank. This year the man on the street has more confidence, sees his chance to buy more stuff on the cuff and can meet the payments and that is the direction he is going."

Proof of the pudding: Current strong level of auto sales have flabbergasted, privately, automotive economists, says Tom Campbell. They just didn't expect the consumer buying rush to reach these heights.

Steel Labor—On current steel-labor talks, The IRON AGE editor said there is still a good chance labor and management will hammer out a wage agreement before the June 30 deadline.

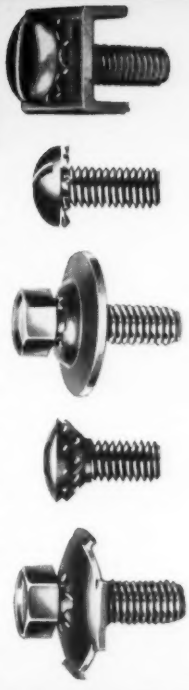
He noted a brand new type of steel labor bargaining is being introduced and fostered by R. Conrad Cooper, U. S. Steel Corp. vice president and chief negotiator for the 12 steel companies in joint session. (See story on P. 53.)

Timken Will Operate

In the recently published list of steel companies which would not be immediately struck by the USWA in case of a strike, the name of Timken Roller Bearing Co., Steel and Tube Div., was omitted in error.

Timken, with a rated annual capacity of 700,000 net tons, has an Aug. 24 contract expiration date.

36 sources



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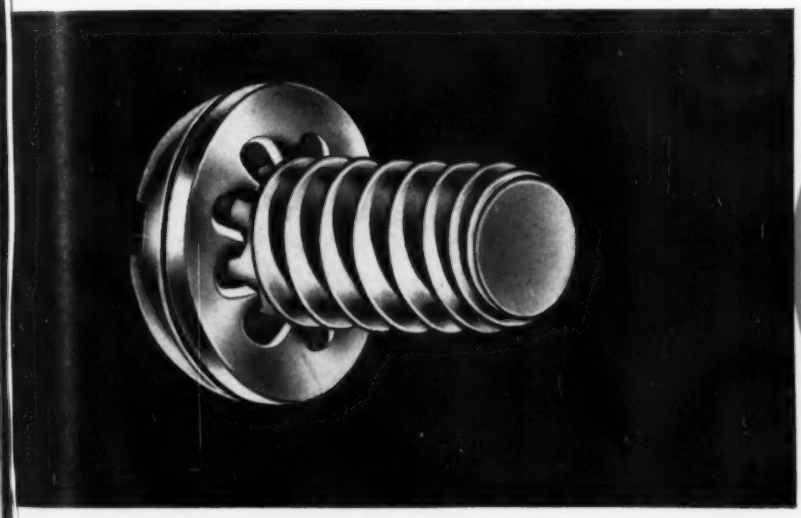

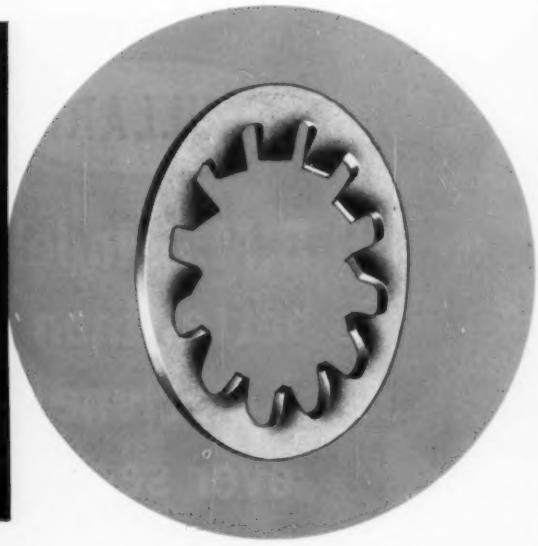

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Russ Harris

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It takes an exceptionally good salesman to spot new applications for an established, basic commodity.

Armco's Russ Harris has the creative sales instinct—and the steelmaking savvy to back it up.

▪ Not many salesmen can walk into a plant the first time and come out with the groundwork laid for millions of dollars of future sales.

Yet a combination of solid steel mill operating experience, metallurgy, and sales savvy enabled Russ Harris, Armco Steel sales representative in Cleveland, to do just that.

An Idea, Then Action — After World War II, Harris could see that a better valve steel would be needed for the higher compression auto engines coming into vogue. He approached a large area valve maker about a new valve steel Armco was in the process of developing. It would replace the chrome manganese then used.

After considerable liaison work and conferences, plus a healthy Harris push, 2 pct chrome, 4 pct nickel, was developed. It was found superior for automobile engines and has since become the top ranking valve steel.

Varied Experience Helps—Talking the language of the metallurgy lab, the mill, and the purchasing agent equally well is no easy trick without a special background. Russ Harris started on his while in high school working summers as a spell hand at the American Sheet and Tin Plate mill in his native New Philadelphia, O. near Canton. After college he started as a $55-per-month blast furnace chemist for the M. A. Hanna Co. at Dover, O., working a seven-day week, 12 hours per day. In two months he was melting steel.

RUSS HARRIS: Taking time off from selling.

With this experience he later transferred to Detroit and continued as a melter, but on electric furnaces, at the John A. Crowley Co. Here in World War I, a technique years ahead of its time was being used—bottom stirring.

Inventions Follow — After the war he continued as a melter in a new field—uranium reduction at Standard Chemical Co., Canonsburg, Pa.—and became an inventor. He worked out the process and furnace for making low-carbon ferrouranium by the carbon reduction of uranium oxide. He became supervising metallurgist there and did considerable work on vanadium tool steels.

The unfortunate closing of the plant pushed Harris into a second new career—selling the tool steels he had worked with so long.

Has What It Takes—He did so well on this and stainless sheet and plate that Rustless Iron and Steel Co. of Baltimore hired him in 1940 and installed him as manager of its Cleveland office. Five years later Rustless merged with the larger Armco. Harris became a salesman again in the Armco Cleveland office and quickly won his spurs anew with the valve steel.

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Commerce Dept. Needs a Leader

Now that the Strauss debate is over the fact remains that the Dept. of Commerce still needs an aggressive spokesman.

The Department's influence has waned and business is not getting the support it deserves.

▪ In the recent sidewalk-style brawling over the confirmation of Lewis Strauss, almost everything was used in the fight except one very important thing. That is the welfare of the Dept. of Commerce itself.

Without re-raising the personal issues involving the Admiral, there is still reason to discuss the status of the Dept. of Commerce, and the need for an aggressive leader to head it.

Aggressive Spokesman — Many officials in Commerce had no particular love for their interim chief. But they hoped desperately for his confirmation. It wasn't so much that they wanted Admiral Strauss, but they wanted someone like him.

The logic is simply this: The Dept. of Commerce has lost status and influence. As the primary advocate of the business point of view, its voice is frequently lost within the Administration, and therefore exerts little influence on policy.

Little Influence—Remember, the 20 years of the Roosevelt and Truman administrations had sapped its prestige. Today, it's hard to imagine that this area of government, which is supposed to represent business, was headed by Harry Hopkins and later Henry Wallace.

People in the department had hoped for a revival of prestige and influence in the Eisenhower Administration. But it didn't work out that way. Commerce viewpoints still failed to get through, particularly if they were opposed by the State Dept., but also if they crossed the Dept. of Defense.

Morale Lift Needed — In such matters as tariffs, quotas, or almost any subject that had an international or defense implication, the point of view of those departments prevailed.

Career men in the Dept. of Commerce saw their influence dimmed, and their morale dropped to the same degree.

That is the situation Admiral Strauss was going to change. The Dept. of Commerce needed a vigorous spokesman, a capable scrapper. These qualities Admiral Strauss has, even his most ardent critics admit.

It is doubtful now if the President can find an aggressive, capable man to fill the job for the remainder of his term. In the meantime, the Dept. of Commerce will continue to move along, without providing business with the aggressive support it needs and deserves.

Productivity Gains Reach Peak

▪ You can look for a leveling off in productivity gains from the high rates that followed the end of the recession.

As you recall, productivity (in terms of output per man-hour) was no less than phenomenal as business emerged from the depths. The most efficient equipment was being operated by the best man at the most economical rates.

It Was Embarrassing — In fact, the rate of productivity was almost embarrassing and business was almost on the defensive. It was difficult to explain soaring production while employment failed to gain at a corresponding rate.

Now, most manufacturing plants have passed their most efficient rate and it takes more man-hours to get a smaller increase in output. You can't call it the point of diminishing returns, but the rate of gain is less sensational.

Employment Jumps — In May, for example, employment gains were the largest for the month since World War II. Output at the same time hit an all-time high with the Federal Reserve Board's Index of Industrial Production reaching 152.

But from now on, any gain in output will have to be matched with a nearly proportionate increase in employment.

USSR Exposition

If you are in New York during July or early August, it will be worthwhile to go to the USSR Exposition on Achievements in Science, Technology, and Culture at the Coliseum.

The Soviets are unloading one million pounds of display material for the show.

You will have to be a critical observer, but it should give you a good idea of Russian industrial progress. Spokesmen claim they will have top technicians at industrial exhibits and insist they will be able to talk freely.

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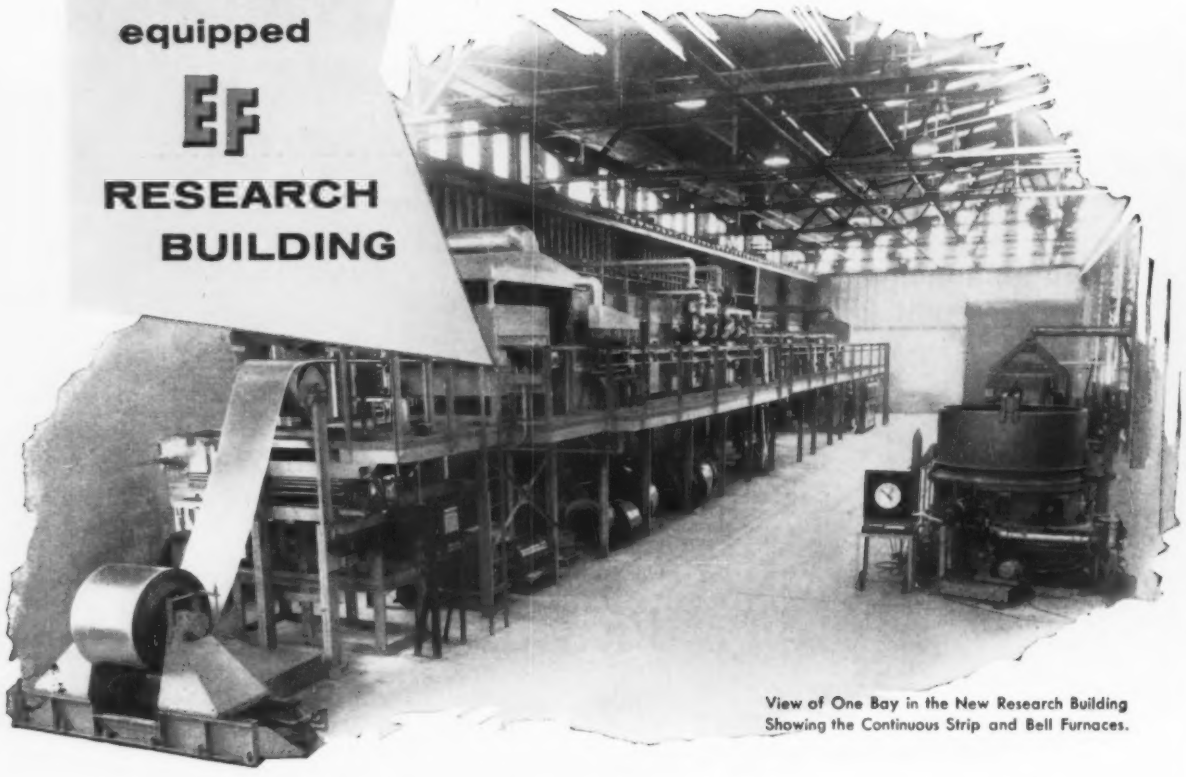

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Now, our facilities are much enlarged. The entirely new building is 80 ft. wide x 180 ft. long. Equipment includes a continuous strip furnace suited for processing at various cycles; bell, wire mesh belt, batch and pusher furnaces, with and without forced circulation; vacuum furnaces for batch or continuous operation; endothermic and exothermic generators; ammonia dissociators; atmosphere refrigerators; adsorption type gas dryers; CO_2 scrubbers, and completely equipped chemical and metallurgical laboratories.

From these new facilities will come improved techniques for treating familiar materials, and new techniques for treating the newer metals of the jet and space age;— also expanded testing of critical materials used in our furnaces, to maintain our unsurpassed standards of quality and performance.

As in the past, our research facilities will be available to metal producers and processors, for development and test work, conducted, if desired, in the presence, and with the assistance of your own technicians and production men.

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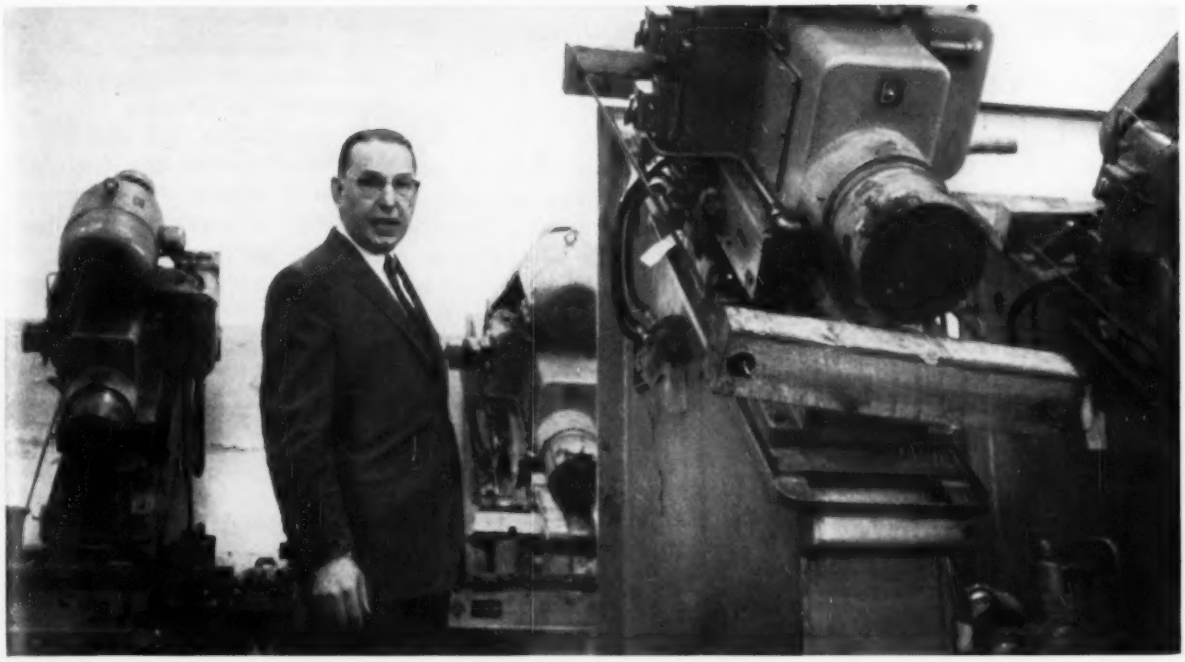


VOICE OF EXPERIENCE: Mr. Cross is widely known in the machine tool industry as originator of a number of important developments in automation. In addition to private industry activities, he has served in important government posts. Since 1955 he has been consultant to the Air Force on machine tool problems. He is also active in professional groups and has been cited for his contributions.

Why Technical Progress Is Vital For Growth and Prosperity

By **Ralph E. Cross**—Executive Vice President, Cross Co., Detroit

It's time that some of the muddled thinking about technical progress and automation is clarified.

Gains in technology provide the only sure way to maintain full employment and a continuing high standard of national living.

▪ One of the pressing needs today is public understanding of the role of technology in our society.

There should be a clear understanding of what it is, how it affects our jobs and our standard of living.

It's important to clarify muddled thinking about technology and its industrial offshoot, the misused and misunderstood term "automation."

And it's time industry has a sound program to preserve and improve our standard of living and full employment through acceleration of technological progress.

What It Is—Most of us take technology for granted. Too few have stopped to think what our jobs, home and travel would be like without it. Technology has been at work since the beginning of history, but it has never been thoroughly understood.

What is technology?

Technology is the application of science to the arts. In other words, first we develop an art for doing something, like the art of farming, flying, or transmitting power. Then we apply scientific principles to it to make it more efficient.

Creates Progress—Thus, it leads to the creation of materials, machines and techniques for doing

"Every new job costs from $12,000 to $15,000 each, and every job requires $450 annually to keep it alive."

things that at some time or another existed only in men's minds.

One characteristic of technology is that it is perishable. As science is applied to the arts, new techniques of doing things replace the old, and there is technological progress.

A second characteristic is that human nature demands technological progress. The idea that the wants of man will go on increasing indefinitely is axiomatic.

Technology in Action—The best way to understand the fluidity of technology is to look at a few examples of technology in action.

Take television tubes, for example. A few years ago, 20-in. TV tubes were selling for $75 apiece. At that time, no one was able to handle more than a 4-lb "gob" of molten glass. Now there is an 8-station machine that automatically handles a 15-lb "gob" in each station, making the funnel of the tube automatically.

The price today is $8.50 instead of $75, and, in the case of one company alone, 2000 people have jobs that didn't exist before. This is just one example, but a typical one.

Price of Neglect—In contrast to success stories, there are many tragic examples of companies that have ignored technological progress and have attempted to maintain the status quo. In many cases, competition forces them out of business with resulting losses of many thousand of jobs.

These examples illustrate the constant change, the turnover that develops out of the application of new technology. Changes such as these go on day in and day out all over our country. It's because of them that we have been able to develop the high level of prosperity and growth that we have in the U. S.

New Jobs Cost—To give you some idea of the magnitude of these changes, consider this fact: Industry must invest $30 to $40 billion annually in plants and machinery to maintain the jobs that are in existence today and to provide jobs for the 400,000 people entering the labor force each year.

It follows, therefore, that if we want to maintain our present living standards, we must keep pumping large amounts of capital into new plants and equipment and we must have a high rate of technological progress to do it. On the surface, this seems like something we ought to do with one hand—but we are not doing it!

Losing Out Abroad—Instead, the American dollar is being viewed with suspicion. More Americans are investing in companies abroad.

The most disturbing move of all is that more and more American companies are building plants abroad to protect their markets. This leads to the export of capital goods dollars, which are often called multiple purpose dollars because they have a multiplying effect on growth and jobs.

Inflationary Demands—In many cases, it is cheaper to make a U. S. product in Europe and ship it across the ocean than it is to make it here at home.

Yet, in spite of this, the United Steel Workers union is demanding another inflationary wage increase that will, if it is carried out, move some more of the steel industry overseas.

Muddled Thinking — The muddled thinking we find about some of these situations is disturbing. For example, today there is a popular notion that automation is taking jobs away from factory workers. You can hardly pick up a newspaper without reading something about it in one form or another.

One story reads: "A new system of unemployment benefits for workers made jobless by automation was proposed to Congress today by Michigan's Gov. Williams."

Now I wonder how Gov. Williams determines that automation is responsible for unemployment. Do you suppose that he considered what effect high taxes, high wages, low work standards, product design, advertising and salesmanship might have had on the situation?

Automation and Unemployment—Automation hasn't caused unemployment in Michigan or anywhere else. Whenever it is applied, it is only the final act in a whole chain of events. The cause could be any one or more of a hundred things, such as high taxes, high wages, need for a new design, and so forth.

Another bit of muddled thinking that disturbs me is the idea that we can correct all of our problems by passing laws and exercising controls.

Back in 1955, Walter Reuther was advocating the guaranteed annual wage as just the right control needed to regulate the introduction of automation. The annual wage is dead for the moment, but the drive for regulation marches on.

It is time that we realize that the very essence of growth is the destruction of the old way of doing things and constant replacement with new technology. There is only one road to a high standard of living and to full employment and that is through the acceleration of technological progress.

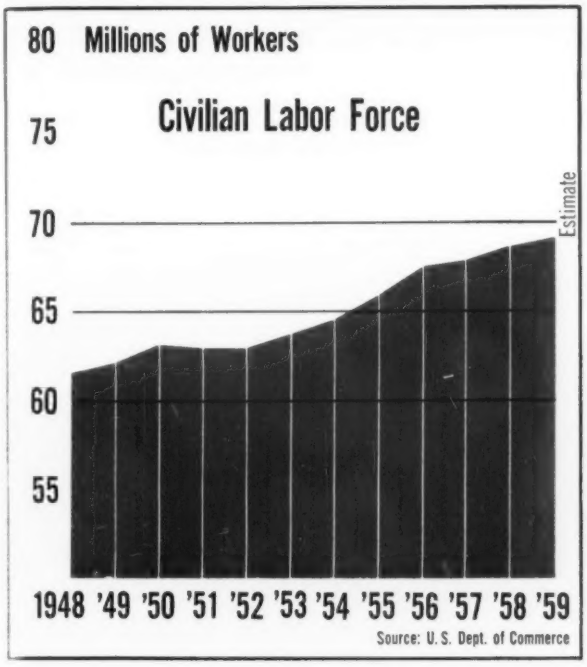
Toward this end, I would like to propose four areas that deserve utmost attention.

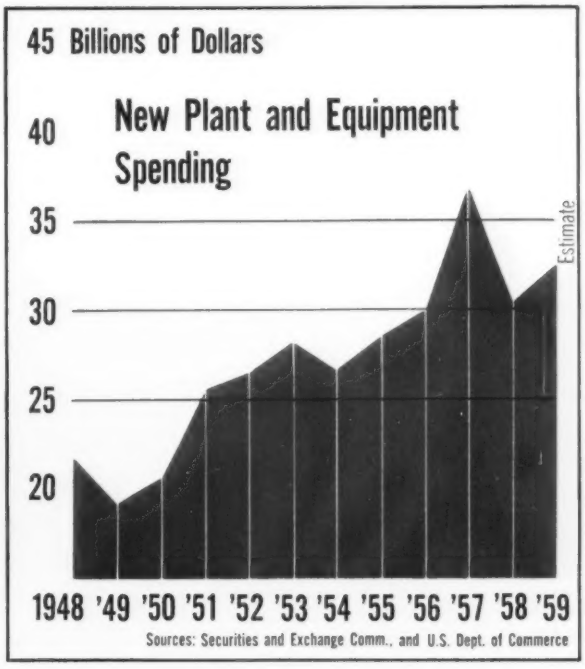
1. Continue Expansion of Research

We must encourage and make possible accelerated research in every field to increase our knowledge of the unknown.

In the past decade, research has grown to a $10 billion a year industry. If this high level of activity continues, we will have an ample

How Industry Spends to Create Employment





supply of new technology on which we can build for the future.

2. Progressive Depreciation Policies

Depreciation provides one of the major sources of funds for technological progress. It is essential that capital invested in machinery and equipment be recovered as quickly as possible so that it can be re-invested for further growth.

A few years ago, tax laws in the U. S. were changed to provide a faster recovery of capital. Through the "sum of the digits" and the "declining balance" methods of depreciation, it is now possible to recover between two-thirds and three-quarters of the investment in the first half of the life of the asset.

Unfortunately, even with these changes, capital recovery in the U. S. is the slowest of any industrial country in the world. It takes from 12 to 30 years to recover capital invested in machine tools here as opposed to 4 to 8 years in the industrial countries of Europe.

3. Increase Productivity

There is little doubt that wages are too high in relation to the wages paid in Europe. Even Walter Reuther recognizes this, and is promoting a campaign to raise the wages of European auto workers in order to cut the competitive price edge of European products.

In the metalworking industry, the American factory worker is paid four to six times more than his European counterpart. Additionally, the standard work week in Europe is 44 hours compared to our 40 hours here. Bad as these conditions are, they might be offset to some extent if we could get rid of union "make work" and "feather-bedding" practices. No one knows the cost of these innocent sounding schemes, but I estimate that 25 pct of our production effort is wasted in this fashion.

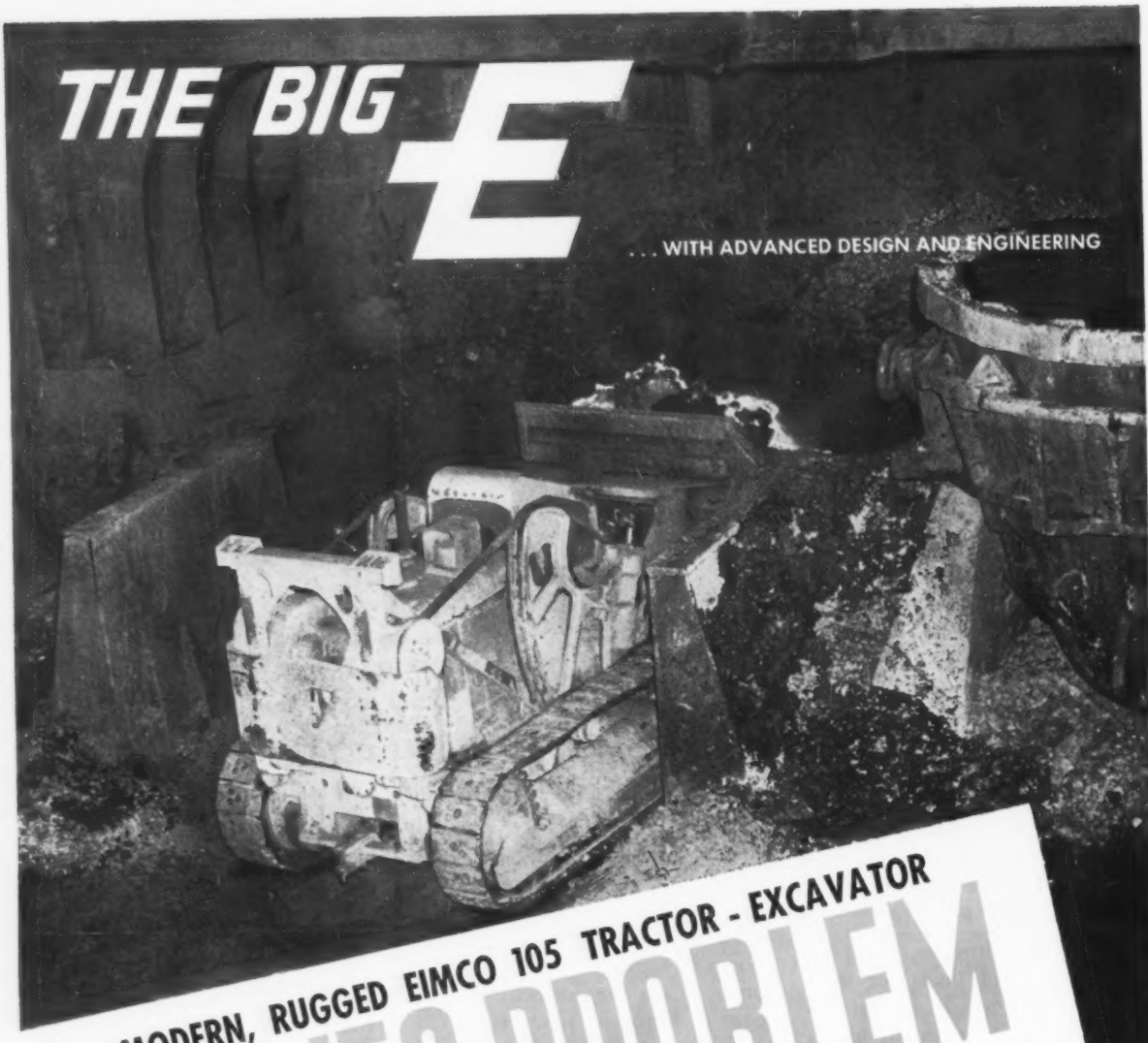
Technology can do part of the job of increasing productivity, but it can't do it all. There are no automatic factories on the horizon that are going to eliminate the need for people. Industry still needs a fair day's work for a fair day's pay.

4. Incentives for Success

If we are going to continue to lead the world in technological progress, we are going to have to provide the incentives that will motivate people to greater effort. Today we have a passion for equality that is stifling progress. It exists in our tax laws, in our labor contracts, and even in our schools.

A few weeks ago I learned that Congress is seriously going to consider fundamental changes in our tax laws. These changes are being promoted by members of both parties. Let's hope that this will be the first step in the destruction of this craving for conformity and that, in its place, we will adopt meaningful incentives for progress.

Reprints of this article are available as long as the supply lasts. You may obtain a copy from Reader Service Dept., The IRON AGE, Chestnut & 56th Sts., Philadelphia 39, Pa.



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Let Metallurgists in on Design

Their Knowledge Can Help Lower Material Costs

In designing parts, engineers should consider economy as great a factor as strength.

Here is where the metallurgist can offer valuable assistance. —By H. R. Neal.

▪ Is your company using the knowledge of its metallurgists to best advantage? There are many instances where metallurgists could be of greater value.

And it probably isn't the fault of the metallurgist that his knowledge isn't being used as extensively as it should. That's the opinion of Richard E. Harvie, metallurgist for Chevrolet Div., General Motors.

Improved Steels Coming—Metallurgy is a dynamic business, he told members attending the summer meeting of the Society of Automotive Engineers last week. Iron and steel, the best known and most widely used materials in the auto industry, have undergone extensive improvements in recent years. Further improvements can be expected, he said.

With increasing economic pressures in the automotive industry, metals must be tailored closely to design, manufacture, and service. "If the engineer uses conjecture in specifying steel, the part may prove satisfactory, but chances are the part will fail in service or be economically unsound," Mr. Harvie warns.

Problem of Choice — Generally, steels are selected by engineers and metallurgists in one of three ways: For hardenability qualities; chemical composition, depending on certain constituents to give desired results, or past experience and similarity to other parts.

However, Mr. Harvie says, selection should boil down to two criteria: Is a metal functional and is it economical?

Strength and Failure—First contributor to the strength of steel is its tensile properties. He notes that almost 90 pct of all service failures of metal parts result from stress fluctuations.

The engineer is familiar with the type of failure caused by localization of stress around sharp radii, abrupt changes in section, nicks, notches, scratches, and other characteristics that indicate fatigue weakness. He doesn't need a metallurgist to warn of these.

But the metallurgist can help in handling the less familiar, unapparent, and invisible stress risers such as inclusions in steel, directional properties in sheet and plate, residual forming, and heat treat stresses.

Avoid Over-Engineering — Mr. Harvie says designing parts with more than adequate strength would be easy. Just use data on the materials' extreme low limits. "How-

Design Tips for Engineers

From a metallurgist's point of view, here are eight prime questions an engineer should ask himself when designing an automotive part — as suggested by R. E. Harvie, Chevrolet metallurgist:

Service Needs—What is the magnitude of the stress the part will be required to withstand in service?

Stress—Will the stress be fluctuating over a wide range and at what speed?

Heat Treatment—Will a heat treatment be required, and is the part designed so it can be heat treated in a practical manner? Will stress risers be present which will make heat treating impractical if not impossible?

Welding—Will welding be required?

Forming—How will the part be formed? Is the hardness requirement such that it can be heat treated before machining to minimize distortion? Is forging or casting a consideration?

Safety—Would the safety of the vehicle and occupants be jeopardized if the part fails?

Corrosion—Will corrosion be a problem and should protective coating be specified? What are the service conditions related to corrosion?

Part Life—Will service be such that favorable residual stresses will increase the life of the part? Should the part be shot peened?

ever, this would be poor engineering practice and everyone concerned would be penalized economically—the manufacturer by increased material and fabricating expenses, and the customers by having to pay for transporting excess weight.

Endurance is another area where the design engineer should consult the metallurgist. Solution may require heat treatment, some other process or just protecting the part surface against corrosion.

The Elusive Properties — Wear resistance, a function of both hardness and microstructure, is the design engineer's next consideration. But Mr. Harvie calls it "one of the most elusive properties of iron and steel, because the properties that make good wear resistance are not too clearly defined." Although, he states cautiously, "higher hardnesses are usually associated with better wearing characteristics."

Elasticity of metals is often confusing, even to engineers. But for all practical purposes it is the same for all steels. A design engineer's only solution, if he's having a deflection problem, is to make the part larger or change the shape. The metallurgist can't prescribe a different steel or a heat treat that would help.

Don't Overlook Economy—Steel achieves its "optimum properties" when in the fully hardened condition before tempering, Mr. Harvie says. But he defines "optimum properties" as meaning "not only satisfactory performances in service but the most favorable properties for machining."

Therefore, "Every engineer should govern his designing so that economy is as great a factor as is strength. The metallurgist can assist him in both phases. Advantage can be taken of the metallurgist's knowledge of processing.

Forging, for Example — "The metallurgist's knowledge of processing extends to forming as well as machining operations. He should be consulted when a part is to be either hot or cold forged, for example. "He is the design engineer's insurance that a material that exhibits poor forging characteristics isn't specified."

If weldability is a consideration, the design engineer and metallurgist should get together, as certain alloying elements and impurities in steels "influence" welding characteristics.

And another area: "Because of the peculiar aging phenomena of low carbon steels used for deep drawing applications, a metallurgist's assistance is valuable in their selection."

Making Final Choice — Where economy has become important to manufacturers, the design engineer and metallurgist each has a part in determining the final cost of a finished part. This means, says Mr. Harvie, that the least expensive material that will produce the desired performance should be used.

However, he explains, this doesn't mean that the cheapest raw material necessarily results in the lowest cost. A costlier raw material can sometimes be used to economic advantage by reducing weight and processing costs.

When in Doubt—There are many other questions the engineer should ask himself (see box, P. 69), but they lead to this: The material specification for a part is a critical phase of design. Some of the more important questions would consider such things as service needs, safety, corrosion, forming, part life, stress, and heat treatment. Then, concludes Mr. Harvie, "If any doubt exists, consult your metallurgist before releasing a component for drafting."

Automotive Production

WEEK ENDING	CARS	TRUCKS
June 20, 1959	131,584	27,795
June 13, 1959	127,029	17,925
June 21, 1958	84,396	17,110
June 15, 1958	78,163	17,403
TO DATE 1959	3,109,771	619,403
TO DATE 1958	2,141,165	427,335

*Preliminary Source: Ward's Reports

The Bull of the Woods

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WATCH NOW--WATCH WHEN HE WORKS IT!
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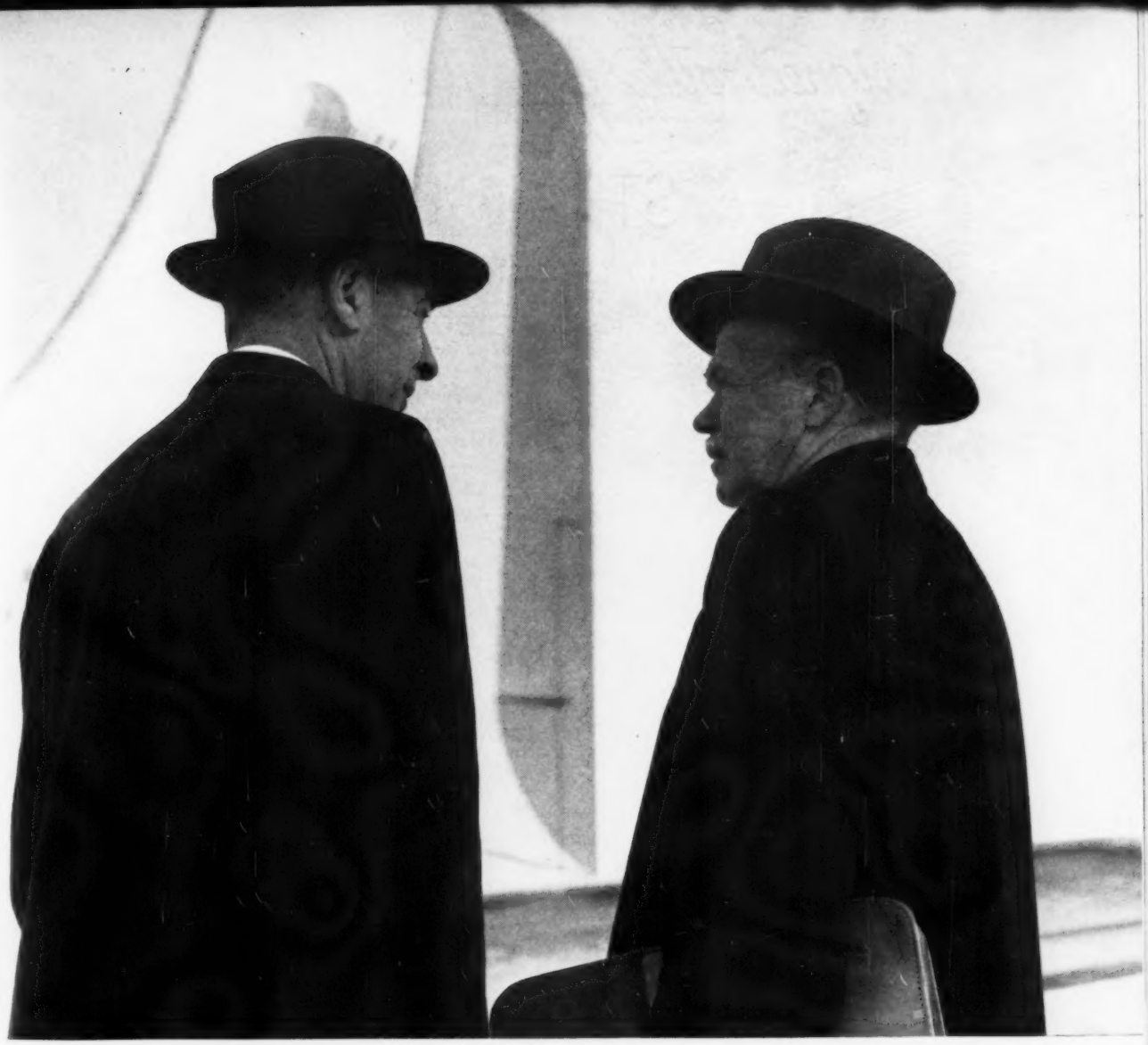
WELL, THEY'RE LIKE AN ARTIST OF THE OLD SCHOOL--IN THESE DAYS OF DEMAND FER SPEED, HE HAS TO SPEND TWO MONTHS MAKIN' A PICTURE LOOK LIKE HE'D DONE IT IN FIFTEEN MINUTES-- SO THEY GOTTA KEEP AHEAD OF TH' YOUNG GUYS, TO KEEP UP WITH 'EM!
MACHINERY KEEP OUT
PICNIC
THE OLD MASTERS



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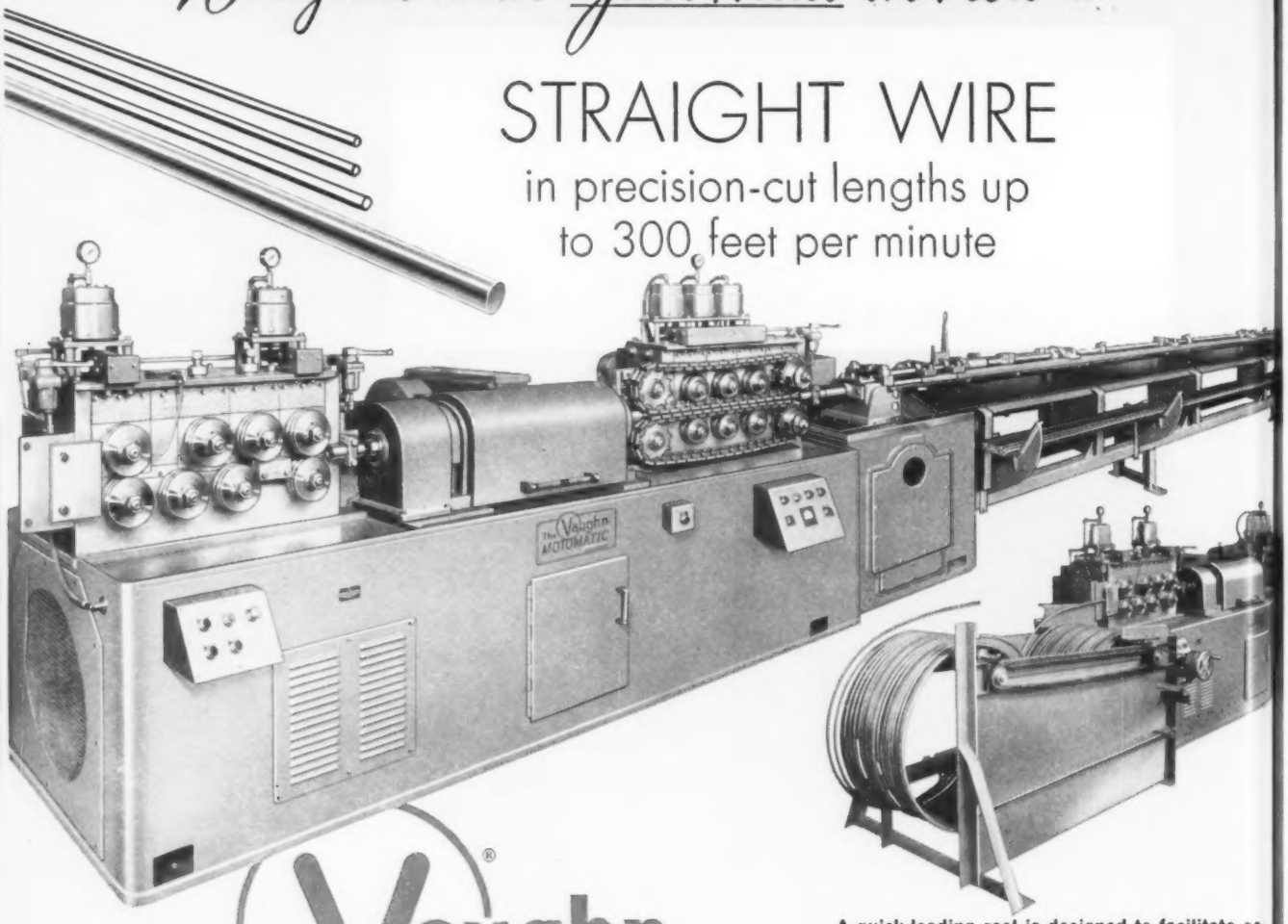

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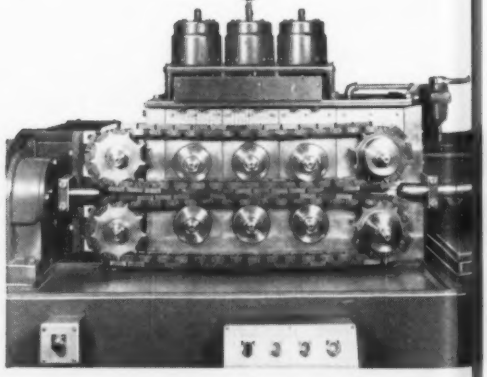

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Better Not Count on a Tax Cut

It's a Possibility, But a Very Slim One at Best

Administration brass is talking about an election-year tax reduction.

But defense and domestic spending outlook offers scant hope for taxpayers.—By G. H. Baker.

▪ Election-year promises of tax cuts are being talked up again. This time, it's Raymond Saulnier, chairman of Ike's Economic Advisers Council, who speaks brightly of the possibility of tax reduction next year.

Trouble is, tax reduction—that is, responsible tax reduction, in which rate cuts would match savings in federal spending—is not likely to come at any time in the foreseeable future.

Why Tax Cut Doubtful — Reason: Month by month, the cold war becomes more costly. As weapons become more complex, the price tags are necessarily marked up. Also, many weapons procurement programs are now only in the planning stages. When these projects move off the drafting boards into the production lines, we're in for a big financial jolt.

This is not to say that Dr. Saulnier and his White House colleagues are talking through their hats when they speak of the chances for tax cuts. They are always careful to explain that what they mean is that taxes can be cut if the Congress will vote "no" on a long list of nondefense spending projects such as flood control and rural electrification. But the likelihood that this will happen is very slight.

What Congress Thinks—A majority of Congress these days is convinced that the nation can and will support a no-controls civilian economy at the same time it maintains a $41-billion-a-year fortress against military aggression.

Labor Board Powers Defined

Its investigations of alleged unfair labor practices can cover a wide range of information, the National Labor Relations Board is told.

The U. S. Supreme Court, in a new decision, confirms the agency's contention that an inquiry may include incidents occurring before and after a complaint has been filed. This ruling upsets a lower court finding that the NLRB must limit its investigation to events preceding the complaint.

Right to Investigate—Full investigating rights must be available to the NLRB when it enters a case, Supreme Court Justice Potter Stewart declares. For the court, he says the NLRB inquiry need not be confined to the specific allegations in the complaint.

The high court ruling is given in a case involving the American Federation of Grain Millers (AFL-CIO) and Fant Milling Co., Sherman, Tex. It was the union contention that the firm refused to bargain in good faith.

Will Foreign Aid Be Cut?

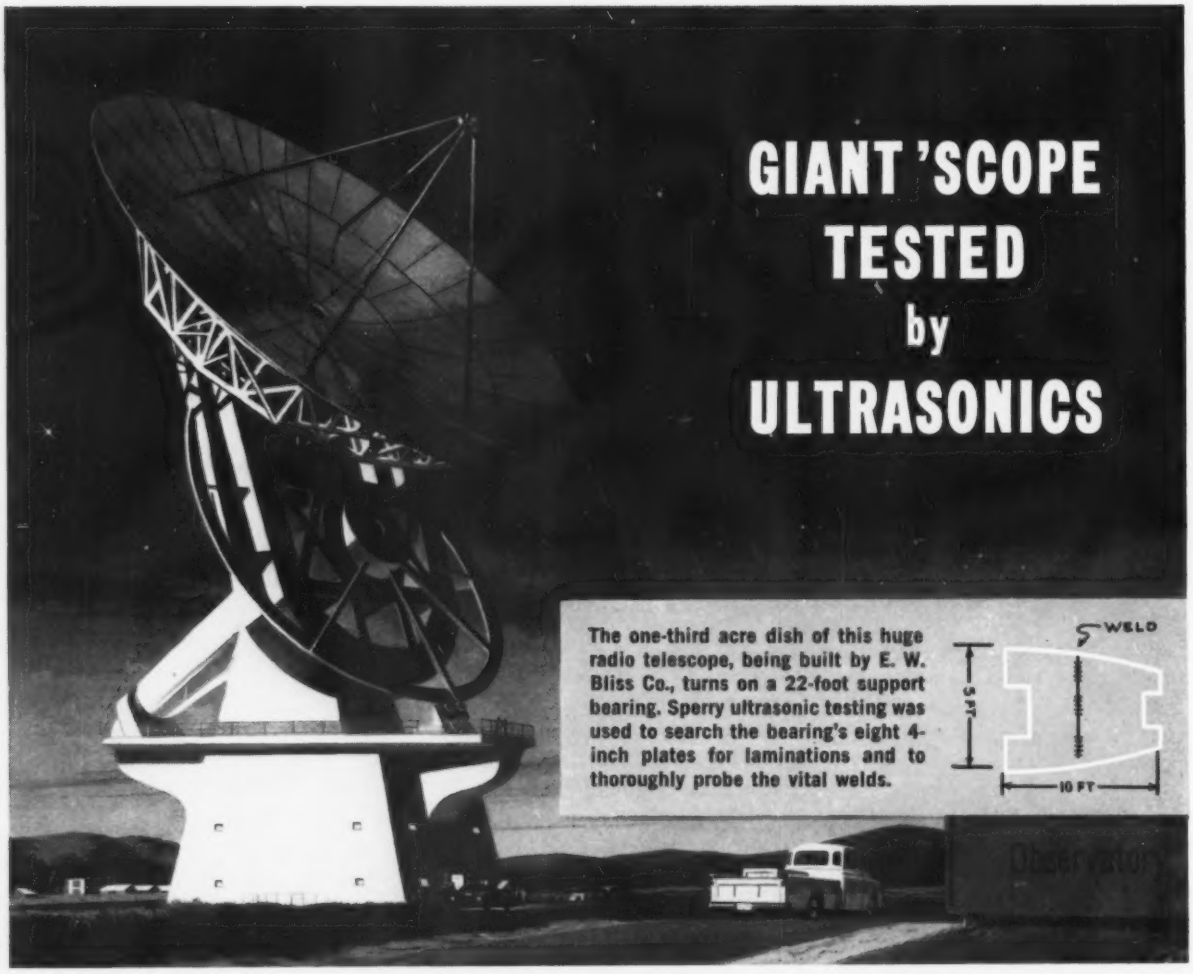
Change of Heart—Slowly, the Congress is coming around to the idea that foreign aid must inevitably be cut and ultimately ended.

It's finally becoming obvious to everyone that the recipients and the givers in the State Dept. and in the International Cooperation Administration will never voluntarily recommend a move to end the gravy train. Initiative must come from within the Congress.

Senate Committee Acts—To this end, the Senate Foreign Relations Committee has voted to demand of the Administration a plan for eventually ending the decade-old program of outright handouts plus military support.

Even Senator Mike Mansfield, D., Mont., a longtime champion of foreign aid, is now insisting that all handouts be ended by June 30, 1963. He'd keep the assistance program going, however, by making loans to needy countries. But no more gifts, he declares.

What Ike Wants — President Eisenhower is asking the Congress to vote $3.9 billion in foreign aid for the 12 months beginning July 1. He'll probably get most of this amount, but with new restrictions written into the law and a requirement that he submit a plan for closing out the gift side of the aid program.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Business at New High in Hawaii

Statehood Opens Gates to Future Economic Growth

Construction and tourist income are topping the islands' biggest boom.

But it is only a taste of what's ahead for Hawaii.—By R. R. Kay.

▪ A grass shack economy—a lazy paradise of palm trees, surf boards, hula girls, pineapple and sugar plantations. That's how many persons think of the Hawaiian Islands.

But that's not so. It's a $1.4 billion economy—and growing at a record-breaking pace.

Impact of Statehood — Islanders will vote in statehood by a landslide this week. And so Hawaii officially will become our 50th state.

What changes will statehood make? Experts there say the first effects will be mostly psychological. Basic industries, resources, trade and service industries, and the tax pattern will stay as is.

But the long-range outlook is far-reaching.

A Man Who Knows—Dr. James H. Shoemaker, Bank of Hawaii's Director of Business Research, keeps his fingers on the economic pulse of the Islands.

He foresees:

(1) Vast influx of capital investments. Since the statehood bill passed, inquiries about opportunities there have tripled.

(2) Greater interest in Hawaii as a market for mainland products.

(3) More branches of mainland firms will open there. More plants will go up to process imported raw material into finished products for local markets.

Biggest Boom Yet—How's business right now? The Bank of Hawaii reports things are really booming in Honolulu. Since the first of the year, "we've seen the greatest peacetime advance in production, income, and employment. Basic business indicators are at a record high."

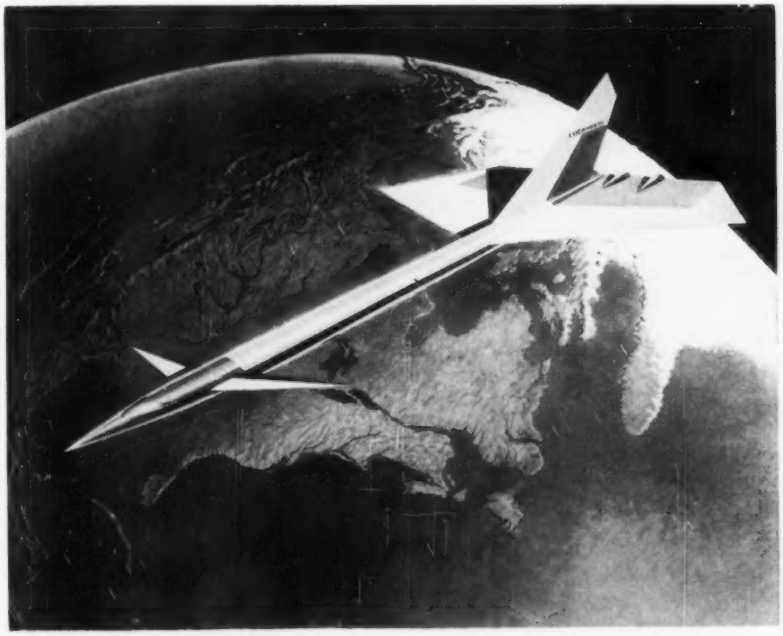
The star performers are construction, up 45 pct, and tourism, up 33 pct over January to April last year.

West Coast Influence—The construction industry—a big user of metalworking goods—is in for a busy time. People in the know say that over $1 billion worth of construction will be poured into the Islands in the next five years. And 30,000 new homes will go up during that time.

Hawaiian economy is tied closely with the Pacific states of the mainland. They send three-fifths of all U. S. tourists to the Islands. And the whole nation eats up a lot of Hawaiian pineapple and sugar.

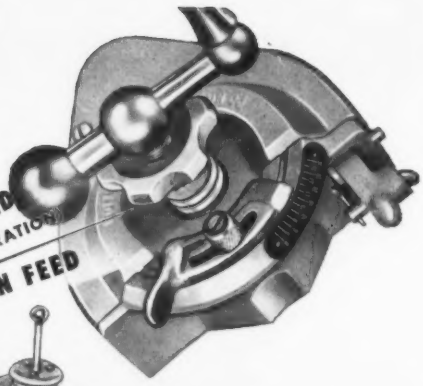
First Place Battle—Pretty soon, jet airliners will make the trip from California to Honolulu in four hours. Tourism, one of the area's big income producers, is in for tremendous expansion. Some say that in a few years it will pass sugar and pineapples.

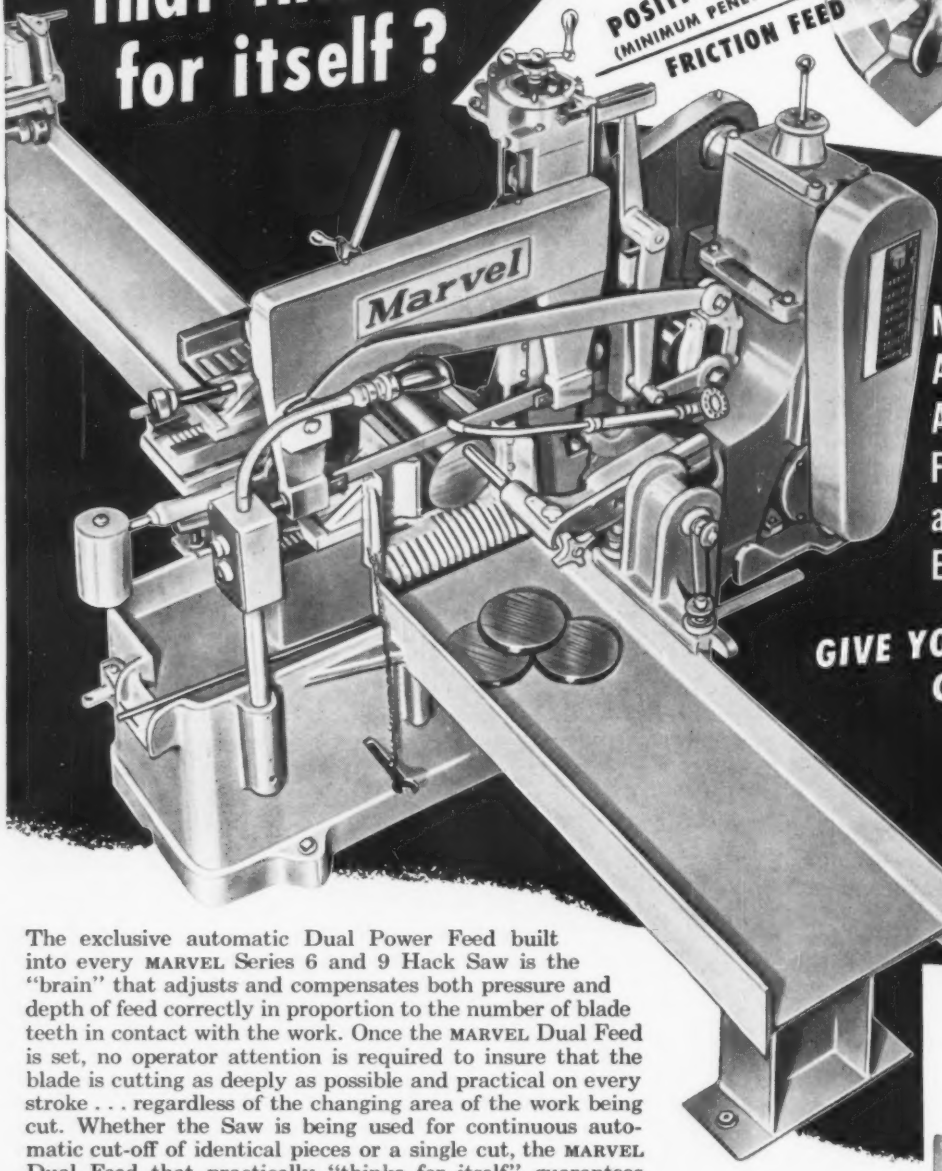
Faster Than Time, Itself



FUTURE JET: A 2200 mph jet transport similar to the one above is "imminently feasible" by 1965, says Lockheed Aircraft Corp. It could leave New York at 8:20 a.m. and be in Los Angeles at 7:45 a.m.

ever see a METAL SAW that thinks for itself?





MARVEL SAWS' Automatic "Brain" Adjusts Blade Feed Pressure and Depth on Every Stroke to GIVE YOU FASTER CUTTING-OFF

The exclusive automatic Dual Power Feed built into every MARVEL Series 6 and 9 Hack Saw is the "brain" that adjusts and compensates both pressure and depth of feed correctly in proportion to the number of blade teeth in contact with the work. Once the MARVEL Dual Feed is set, no operator attention is required to insure that the blade is cutting as deeply as possible and practical on every stroke . . . regardless of the changing area of the work being cut. Whether the Saw is being used for continuous automatic cut-off of identical pieces or a single cut, the MARVEL Dual Feed that practically "thinks for itself" guarantees that the work is cut-off in the fewest possible number of strokes.

Heavy duty MARVEL Series 6 and 9 Hack Saws embody every practical design and operating feature to give you speed, accuracy and operating economy you can find in no other metal cutting saws.

Catalog C85 has complete details, facts and figures on both Marvel metal cutting Hack Saws and Band Saws. Write for it today.

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MARVEL *Metal Cutting* SAWS
Better Machines–Better Blades

Russia's Big Push on Automation

Red Studies on Automatic Machining Bearing Fruit

Study groups will turn over automatic lines for machining irregular products.

Further studies are being made into four major areas of automation.—By E. J. Egan, Jr.

▪ This will be a big year for automation in Russia. Various organizations concerned with machine tool design and manufacture intend to turn over to industry complete automatic lines for machining double gears, spiral bevel gears, stepped shafts and carburetors.

The same groups intend to research and design other automatic lines for producing heat treated spline shafts, flanges, pistons, other machine components, and a number of cutting tools.

Four-Point Program—This year, also, Soviet machine tool masterminds plan to: (1) design new band grinding machines and surface shaving machines in line with newfound information on the kinematics of form generation; (2) establish rigidity norms for machine tools and prepare corresponding national standards; (3) seek new materials and methods to reduce the metal requirements of machine tools and increase their life; (4) standardize new machine tool types.

A technique called "group machining" is also being adopted at full speed by Soviet production engineers. They group roughly similar types of parts—forks, levers, brackets, covers, machine slides—load them on rotary index tables and process them on special multiple-spindle equipment, chiefly drilling machines and milling machines.

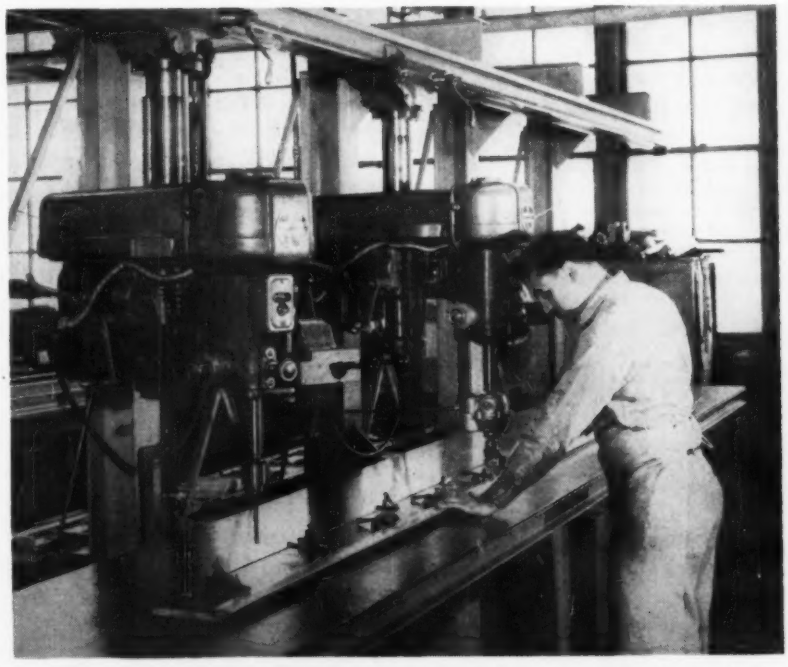
Production Benefits—Using this technique, one Soviet lathe-building plant has increased production of some parts by as much as 500 pct.

Tooling Translations—The Production Engineering Research Assn. of Great Britain is printing a monthly, cover-to-cover translation of "Stanki i Instrument," one of the Soviet's foremost production engineering periodicals, PERA's translation, called "Machines and Tooling," cost $12 yearly. Subscription orders should go to PERA, Melton Mowbray, Leicestershire, England.

Another British group, Engineering Information Services, prints a monthly "Digest of Soviet Technology." The May issue, for example, has abstracts of some 40 technical articles culled from various Soviet journals. They're grouped under the following headings: (1) Design and Production, (2) Metallurgy, Welding, and Foundry Production, (3) Instruments and Automation, (4) General.

How to Subscribe — U. S. and Canadian subscribers pay $18 for an annual subscription to the "Digest," ($22 for air mail delivery), and send their orders to Engineering Information Services, Kirkham, Preston, Lancashire, England.

Drill Presses Ride Rails



SPEED THE JOB: Two Walker-Turner overhead presses drill and tap long guide bars at Kidde Textile Machinery Corp., Bloomfield, N. J.

INDUSTRIAL BRIEFS

TVA Gets $24 Million Offer—Westinghouse Electric Corp. has offered to build for the Tennessee Valley Authority the largest steam turbine-generator unit in existence. According to a Westinghouse official, the machine, which would be delivered by Jan. 1, 1962, would cost TVA $24 million.

Inland Expansion Note—A two-stand, 54-in. temper mill will be part of new rolling facilities being built by Inland Steel Co. at Indiana Harbor, Ind. Key electrical equipment for this mill is being furnished by Allis-Chalmers Mfg. Co.

Up-to-Date Forging—Kropp Forge Co., Chicago, is completing a $200,000 modernization program to improve its steam power plants and reduce operating costs. A program is under way to modernize the company's heat treating department to meet the exacting heat-treat specifications of "exotic alloys" such as titanium and stainless steel.

New Refractory Specialty—Refractories Div., H. K. Porter Co., Inc., has begun production of "Plastikrom" made at its new $12 million plant at Pascagoula, Miss. A basic refractory specialty, it will be stocked in Pittsburgh, Chicago, and Los Angeles Refractories Div. plants and distributors' warehouses.

"Mr. Sampson? I'm afraid he's tied up right now."

Open for Business—A new sales engineering organization, the D. E. Miller Co., has been formed by Don Miller, former manager of Chrysler Corp.'s Mound Road Engine plant. Headquarters are located at 84 Auburn Rd., Pontiac, Mich. The new company will handle product lines of Colonial Broach & Machine Co.

Top Wire Men—W. D. Dreher, wire product sales manager, Western Div., Colorado Fuel & Iron Corp., was elected president, Wire Reinforcement Institute. B. D. Bennett, manager, construction material sales, American Steel & Wire Div., U. S. Steel Corp., was elected vice president.

Ferroalloys Bulletin—Chromium Mining & Smelting Corp., Ltd., will spend $2 million on expansion of plants for production of chromium and silicon ferroalloys. Improvements are planned for the company's smelter at Memphis, Tenn., where an open-arc tilting furnace will be installed, and at the Riverdale, Ill., and Beauharnois, Que., plants.

Bi-Metallic Transfer — The bimetallic foundry production of Al-fin Div., Fairchild Engine & Airplane Corp., has been acquired by Arthur Tickle Engineering Works, Brooklyn, N. Y. Al-Fin, which continues its design, consulting, licensing, and supervisory functions, will work closely with Tickle on the phases of bi-metallic casting.

Faith in Computers — Philco Corp. is building a multi-million dollar computer center near Willow Grove Pa. The plant will contain national sales offices and manufacturing facilities for the Transac S-2000 large-scale electronic data processing system, Philco's industrial process controls, and mobile field computers for the military.

Navy Orders F8U's—The Navy Bureau of Aeronautics awarded a $25.6 million contract to Chance Vought Aircraft, Dallas, for more F8U-2N jet aircraft and support equipment. The plane is a carrier based, limited all-weather fighter.

Patents Granted—Ampco Metal, Inc., Milwaukee, has been granted patents in the U. S., Austria, France, Italy, and Canada on its new Grade 8 alloy for use in chemical industries. U. S. patents have been granted also on a heat treat method to increase the "stiffness" of various Ampco alloys.

Fuel Research — Air Reduction Co., Inc., plans to build a test lab in Franklin Township, N. J. Designed to supplement the facilities of Airco's Central Research Laboratories at nearby Murray Hill, N. J., the lab will be devoted to research on fuels and oxidizers.

Moving to Flint—Aluminum Co. of America will move its Pontiac, Mich., branch sales office to Room 510, Mott Foundation Bldg., Saginaw and First St., in downtown Flint. The new address will be effective June 27.

South Bend Sold — Stockholders of South Bend Lathe Works, South Bend, Ind., approved the sale of assets and business to American Steel Foundries, Chicago. It will be operated as a subsidiary of ASF under the name of South Bend Lathe, Inc. The transfer was made effective as of June 12, '59.

Aft-End Boilers — The Babcock & Wilcox Co. will build marine boilers for installation aboard four "machinery aft" cargo ships. Contract was awarded by National Steel & Shipbuilding Corp., San Diego, under terms of a replacement program subsidized by the Maritime Administration.

More Pig to Market—Republic Steel Corp. increased its share of the market for pig iron to 11.4 pct in 1958, the company announces. Republic's share of the market has increased steadily since 1948 when it accounted for 8.8 pct.

Research Center — A new research center, comprising 40,000 sq ft of floor space, will be built by The Warner & Swasey Co. on a 12-acre site located on Aurora Rd. in Solon, O., east of Cleveland.

AUTOMATIC PRODUCTION is faster, more accurate, more profitable

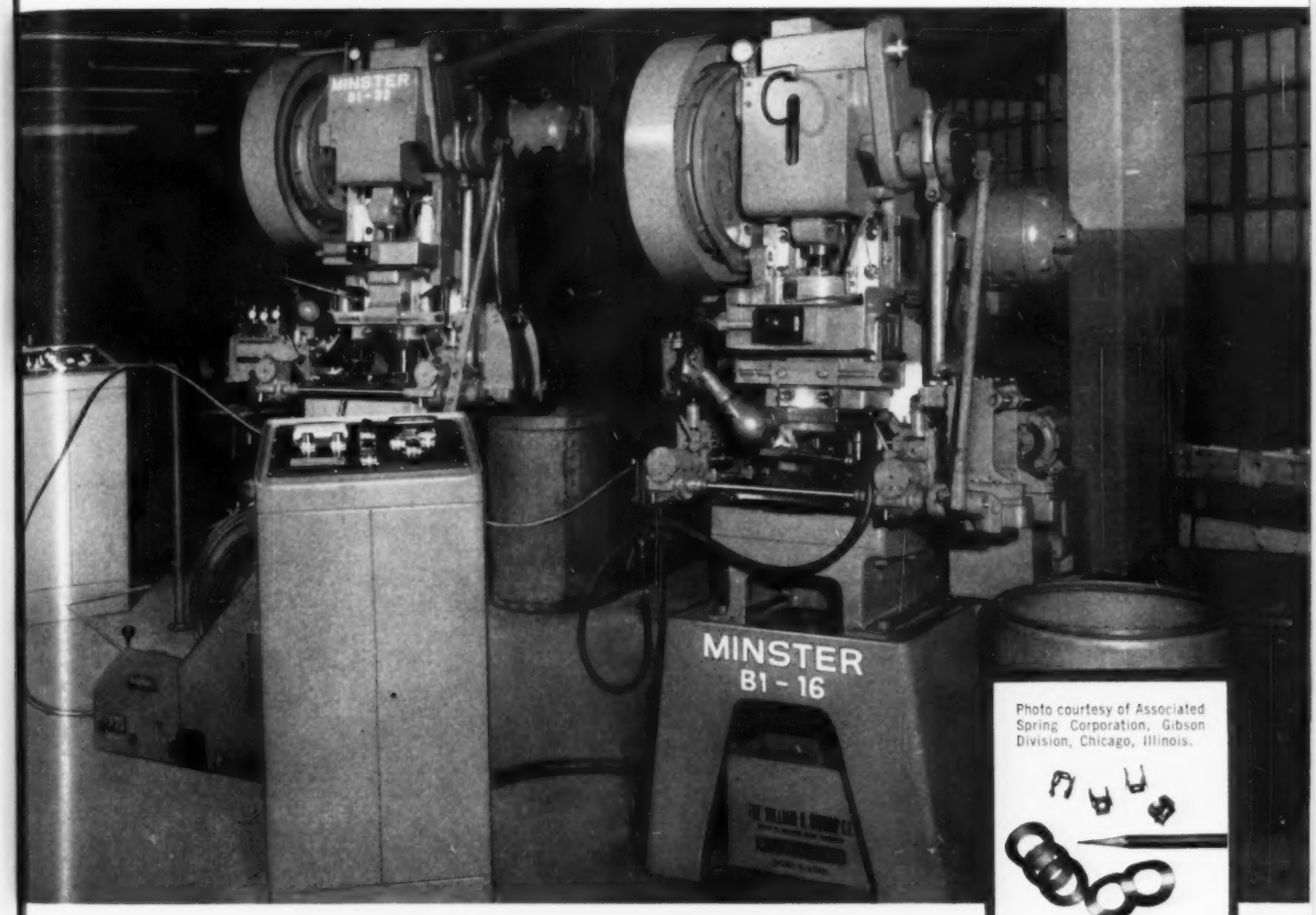


Photo courtesy of Associated Spring Corporation, Gibson Division, Chicago, Illinois.

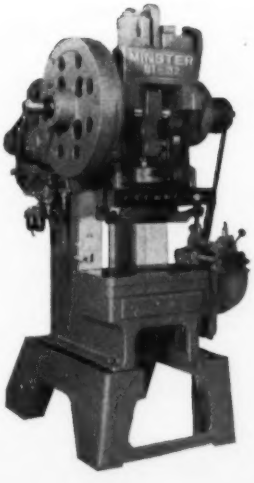
Minster B1 High Speed Gap presses range in capacity from 16 to 60 tons. They're compact and highly efficient for long or short run small parts production from coil stock.

Minster B1 High Speed Gap Presses

You gain in many ways when you run single or multi-stage jobs automatically at high speeds. You increase production and slash costs. Less equipment is needed, cost per part is lower and that means more profit.

Automatic production is always *most* profitable when you take advantage of Minster's technical knowledge and wide range of presses and feed equipment. Minster matches the proper type and size of press and feed to your requirements . . . gives you maximum versatility in material size and job selection.

Let us show you the best way to run your jobs automatically—at greater profit. Write or call today.



The Minster Machine Company • Minster, Ohio

MINSTER®

CAST STEEL "Seat of Power"...76 TONS OF IT!

Here's half of a 152 ton cast steel reciprocating engine bed—the other half is on the shipping dock. Each half is a one piece steel casting 33 feet long, 9 feet wide and 5 feet at its maximum height . . . typical of the diverse steel castings turned out in our foundries.

Metallurgists, engineers and experienced foundrymen team up here to produce quality steel castings of all shapes and sizes for rolling mills, cement mills, ships, diesel engines, hydro-electric turbines and engines, steam hammers, presses and all types of industrial machines. Today's experience in the quality control of steel castings and forgings here is the product of many years serving a wide diversity of industries.

You can be sure of the results you expect . . . consult with us on your cast and forged steel requirements.

•

MEMBER

Build With Steel Castings

ERIE FORGE & STEEL CORPORATION

ERIE, PENNSYLVANIA

Meta-Mold Aluminum Co. — **R. B. Courchene,** elected president.

Wilton Tool Mfg. Co., Inc.,— **A. J. Vogl,** appointed president, and **William Ferrick,** appointed vice president-sales manager.

National Steel Corp.—**L. T. Campbell III,** appointed asst. to the vice president, engineering.

Houdaille Industries, Wales-Strippit Div.—**Emanuel Schugar,** appointed group vice president, Buffalo; **R. A. Johnson,** appointed general manager of the Division, Akron, N. Y.

Allied Chemical Corp., General Chemical Div.—**J. P. Farrell** and **J. S. Brown,** appointed vice presidents.

Buffalo Steel Corp.—**W. R. Dirksen,** appointed vice president.

U. S. Steel Corp., American Steel & Wire Div.—**J. J. Grimes, Jr.,** appointed general superintendent, New Haven (Conn.) and Trenton (N. J.) Works; **E. E. Caspell,** appointed general superintendent, Donora (Pa.) Works.

Buck Iron Co., Inc.—**L. A. Dunn,** named general manager.

American Welding & Mfg. Co., Building Products Div.—**H. E. Sullivan,** named general manager.

Wheeling Steel Corp., Benwood Works—**L. C. Kemo,** named Divisional superintendent, production.

M. M. Chapman, appointed an administrative vice president, commercial, U. S. Steel Corp.

H. J. Mullin, appointed vice president, sales, U. S. Steel Corp., Pittsburgh.

The International Nickel Co. of Canada, Ltd.—**J. S. Anderson,** elected asst. to the vice president and asst. treasurer.

Republic Steel Corp.—**T. J. Allen,** appointed asst. superintendent, blast furnaces, Buffalo plant.

The Chicago Screw Co.—**G. R. Bouwkamp,** promoted to manager, automotive valve tappet manufacturing.

Hewitt-Robins, Inc. — **R. R. Allen,** appointed director, engineering, research and development.

United States Rubber Co., Mechanical Goods Div.—**J. V. Drum,** appointed marketing manager.

Bryon Jackson Pumps, Inc.— **Hugo Baldelli,** appointed Southwestern regional manager.

Allis-Chalmers Mfg. Co.—**R. J. Dineen,** appointed manager, product sales, Electrical Dept., Norwood (Ohio) Works; **W. H. Davis,** appointed asst. manager, Norwood Works, Electrical Dept. and **J. F. Fenske,** manager of the depart-

(Continued on P. 83)

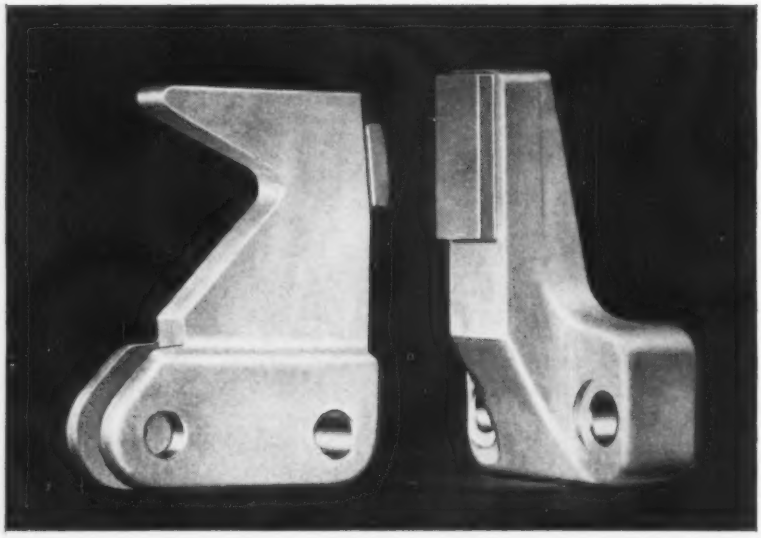
P. B. Harwood, appointed senior vice president, Cutler-Hammer Inc., Milwaukee.

E. B. Fitzgerald, appointed vice president, engineering, Cutler-Hammer Inc., Milwaukee.

E. W. Vereeke, elected president, Heil Process Equipment Corp., Cleveland.

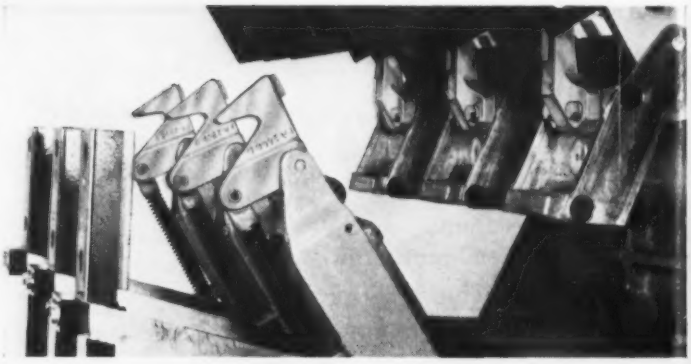
TWICE-WROUGHT METAL

of die-pressed forgings helps Federal Pacific make new air circuit breakers more rugged—cuts machining costs in half

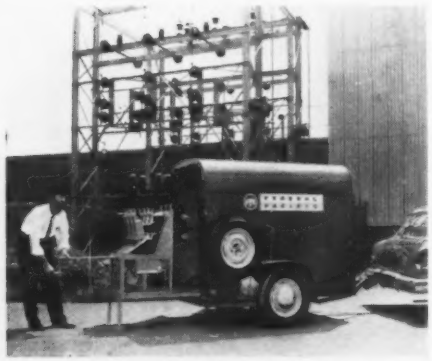


In its new Type DST magnetic air circuit breaker line, Federal Pacific Electric Company, Newark, N. J., builds in dependable operation and long life with parts of outstanding mechanical and adequate electrical properties.

Typical of this attention to detail are the arcing contacts (left). Similar parts previously used had been castings or built-up assemblies. Now the contact bodies are Anaconda Forging Brass-250 die-pressed forgings. The twice-wrought metal is denser, stronger, withstands mechanical shock better—reducing the fatigue factor and producing longer service life. The contacts also have higher conductivity. And best of all, their consistent dimensional accuracy and smooth finish cut machining costs in half.



RIGHT: Movable arcing contact assemblies at the left and the stationary arcing contact assemblies at the right in a 5-kv Federal Pacific Type DST air circuit breaker. They have a momentary current-carrying capacity of 60,000 amperes. Contact tips of tungsten alloy are silver-soldered to the forgings. These are two of several areas where Federal Pacific uses the superior physical properties of Anaconda die-pressed forgings to help provide dependable operation and long service life in its line of metal-clad switchgear.



Federal Pacific takes its circuit breakers out to industrial and electric utility customers. Here a representative sets up a demonstration of a 5-kv, 1,200-amp breaker in the field.

IT IS often easier than you think to achieve high quality and performance while simplifying fabrication and cutting over-all costs. American Brass technical specialists are constantly working with designers, production engineers and buyers, helping them meet their joint requirements—through the use of such Anaconda mill products as die-pressed forgings, extruded shapes, special-shape tubes. For this kind of practical help, see your American Brass representative or write: The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Toronto 14, Ontario. 8044

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NICKEL SILVER · MILL PRODUCTS

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YODER

Roll Forming Equipment—Product dependability—integrity of manufacture—engineering for specific production needs have all contributed to establish Yoder equipment as the industry standard of excellence. Since 1909 Yoder-built machinery, including Pipe and Tube Mills, Roll Forming Equipment and Rotary Slitters, have earned world-wide customer satisfaction and recognition.

Profit from Yoder's years of engineering and service experience. Send today for the illustrated Yoder Roll Forming Equipment Book.

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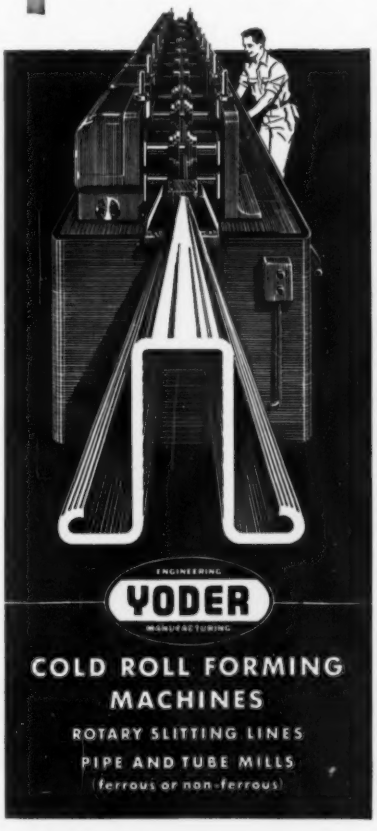


(Continued from P. 81)

ment's industrial sales; **C. J. Kraus,** appointed traffic manager, West Allis Works.

B. E. Phillips, appointed acting general manager, Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.

American - Standard, Industrial Div.—**R. C. Habicht,** appointed product manager, Special Products Dept.

International Business Machines Corp.—**W. H. Johnson,** appointed executive asst. to the president.

J. E. Mitchell, named general sales manager, Industrial Truck Div., Clark Equipment Co., Battle Creek, Mich.

Koppers Co., Inc., Metal Products Div.—**J. W. Pennington,** appointed general manager, Piston Ring and Seal Dept.; **W. B. Sawers,**

(Continued on P. 86)

One order, one source
. . . every fastener need

Full Line . . . Fast Service!

Good service you can count on . . . our reputation is built on it. With the ever increasing demands of industry, a dependable balanced inventory is a foremost consideration. Screw and Bolt Corporation of America meets all your needs—from a complete line of quality industrial fasteners, personalized service, and with a network of leading distributors and strategically located warehouses.

Keep us in mind, one call can do it all.

VMA 6544

SCREW AND BOLT CORPORATION OF AMERICA P.O. Box 1708 Pittsburgh 30, Pa.

Formerly Pittsburgh Screw and Bolt Corporation

SERVES THE NATION

America's Most Complete Line of Industrial Fasteners

DOW

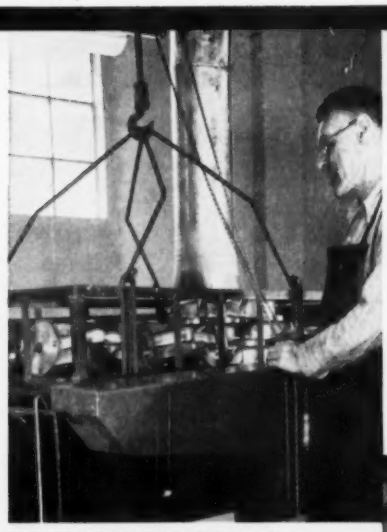
metal cleaning report no. 2

case histories from your Distributor of Dow Solvents

Flo-ball rocket valves are cleaned ultra-fine with Chlorothene. Fire hazards and toxicity problems are virtually nonexistent.

CHLOROTHENE MAKES ROCKET VALVES READY FOR ORBIT

Livingston, New Jersey—An Eastern concern in the business of manufacturing "flo-ball" valves for rockets was faced with a metal cleaning problem. They used an ultrasonic bath to remove grease and other contaminants. Problem: Toxicity and fire hazard. Distributor's answer: Chlorothene® (Dow 1,1,1-trichloroethane, inhibited). Chlorothene did the ultra-fine cleaning job demanded. But, most important, the low toxicity rating of Chlorothene plus the fact that this versatile solvent has no fire or flash point solved the fire hazard and handling problems at the same time! Happy result: Renewed long term valve contract for the New Jersey firm.



DOW SOLVENTS MEN KNOW EQUIPMENT, TOO!

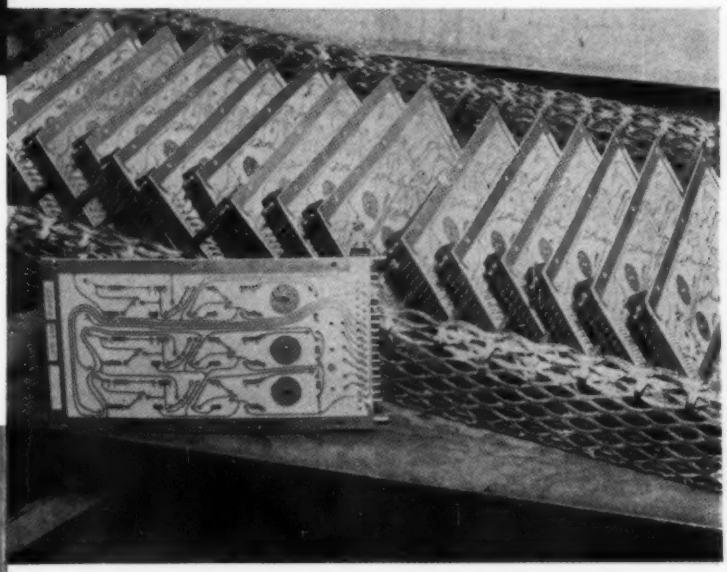
Paris, Illinois—An electric parts manufacturer had a problem: excessive vapors from his perchloroethylene degreasing operation. Result: solvent loss, worker discomfort, decreased production. A team from Dow and the distributor carefully studied the degreasing equipment. By changing adjustments on the machinery, the problem was solved. The condenser capacity was inadequate to condense and control the vapor. The point: Technical service men from Dow and its solvents distributors have cut their teeth on solvent and equipment problems. Their purpose in the field is to help customers. When their services are used properly, they save companies money!

COKING PROBLEM ELIMINATED

Machine company tried a number of brands of trichloroethylene to clean small machine parts made of brass, steel and aluminum. With each brand tried they experienced serious coking problems in their vapor degreaser. Periodically it had to be shut down for two or three days while the coal-like residue was chiseled out. The Dow solvents distributor in the area suggested NEU-TRI®, Dow's super-stable neutral type of trichloroethylene. NEU-TRI was tested for thirty days. At the end of that time, no coking deposits had appeared, and NEU-TRI has done the job ever since!

CIRCUITOUS ROUTE TO CLEAN CIRCUITS

St. Paul, Minnesota—Electronics manufacturer had to clean rosin flux from electric circuits. Trichloroethylene in this vapor degreasing operation was too slow and expensive. They had previously tried ultrasonics, but that process took the finish off the circuits. The fast, economic answer: Chlorothene, Dow's safer, more effective cold cleaning solvent. Chlorothene speeded production, did not injure the finish, reduced cleaning costs 16%! Now they complete the circuit on time!



Time and time again, Dow solvents distributors help manufacturers improve cleaning and stripping operations. And for two good reasons: (1) Dow offers the widest line of chlorinated solvents for modern industry; (2) Dow backs its distributors to the hilt with technical information and on-the-job help. Chances are good that one of the many Dow industrial solvents can help smooth out your operations, too. Dow solvents are made to high purity standards and each is designed to do a specific job and do it well. For help on your metal cleaning problems call on the nearby Dow solvents distributor.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

FREE . . .
TECHNICAL SERVICE
on 24-hour notice

Your distributor of Dow solvents will gladly help you with any problems you are experiencing with metal cleaning solvents. He can have a trained solvents specialist en route to your plant within 24 hours after your call is received!

Ask your Dow solvents distributor for details.

CHLOROTHENE®
TRICHLOROETHYLENE
PERCHLOROETHYLENE
METHYLENE CHLORIDE

See Your Distributor of Dow Solvents First!

(Continued from P. 83)

appointed manager, Coupling Dept., Baltimore, Md.

Screw & Bolt Corp. of America, Southington Hardware Div.—**W. W. Stover,** appointed plant manager, Southington, Conn.

Consolidated Electrodynamics Corp.—**V. M. Meagher, Jr.,** appointed marketing manager, transducer products.

The Armco International Corp., Technical Div.—**J. E. Coddington,** promoted to senior mechanical engineer; **A. L. Hacker,** appointed industrial director, Armco Industrial e Comercial S. A., Armco International's subsidiary, Brazil.

U. S. Steel Corp., American Steel & Wire Div.—**R. W. Bauer,** appointed asst. manager, Commercial Research Div., General Sales Dept., Cleveland.

Example: In Type 302, an 18 gauge 36" x 120" sheet has a base price of 52¢ per pound. In sheets of this size, each .001" of thickness weighs 1.26 pounds per sheet. Thus, each .001" of unnecessary thickness costs you at least 65.5¢ more per sheet.

On the surface this may seem insignificant, but it has a marked effect on the total price you pay for a given quantity of stainless steel sheet. With cost a factor, this can be important since stainless steel is purchased by weight.

Using the above example, a mere .001" of unnecessary thickness costs you $20.76 more per ton. If you figure the maximum allowable gauge thickness variation of plus or minus (10%), you can readily see that the price you pay for overall sheet thickness could involve much needless cost.

Washington Steel has the equipment and the experience to produce MICRO-ROLD stainless steel to tolerances much closer than standard industry tolerances. Usually money can be saved by first selecting the minimum gauge that will serve the requirements of the application, and then specifying that the thickness be rolled to the light side of the gauge range. This specification involves no cost extra and is standard practice at Washington Steel. (If exact close tolerances must be guaranteed, there is a nominal additional charge.)

Consult your nearest MicroRold Stainless Steel Distributor. He will gladly show you how to save money on your stainless steel purchases.

Washington Steel Corporation

6-L Woodland & Griffith Avenues

Washington, Pa.

Bucyrus-Erie Co.—**R. C. Byers,** appointed acting works manager, Evansville, Ind., plant.

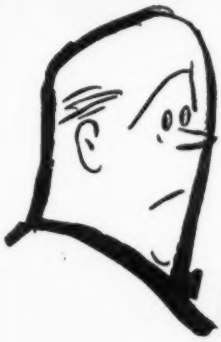
O. M. Haseltine, appointed sales manager, Ajax Electric Co., Philadelphia.

I. C. Rowe, named director, Governmental Relations, Rockwell Manufacturing Co., Pittsburgh.

Hanson - Van Winkle - Munning Co.—**W. J. Harper,** named chief engineer; **D. M. Roney, Jr.,** appointed sales manager, Equipment Div.

General Electric Co. — **G. L. Roark,** appointed manager, marketing, High Voltage Switchgear Dept., Philadelphia; **R. C. Crawford,** named consultant, marketing for the department.

Hevi-Duty Electric Co.—**H. A. Woolman,** appointed sales and engineering representative, Western Pennsylvania and West Virginia areas.



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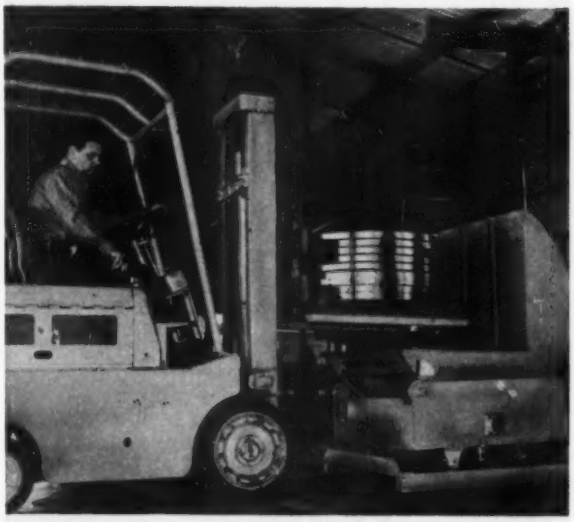

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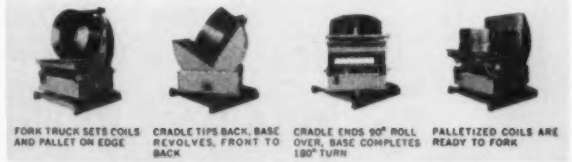

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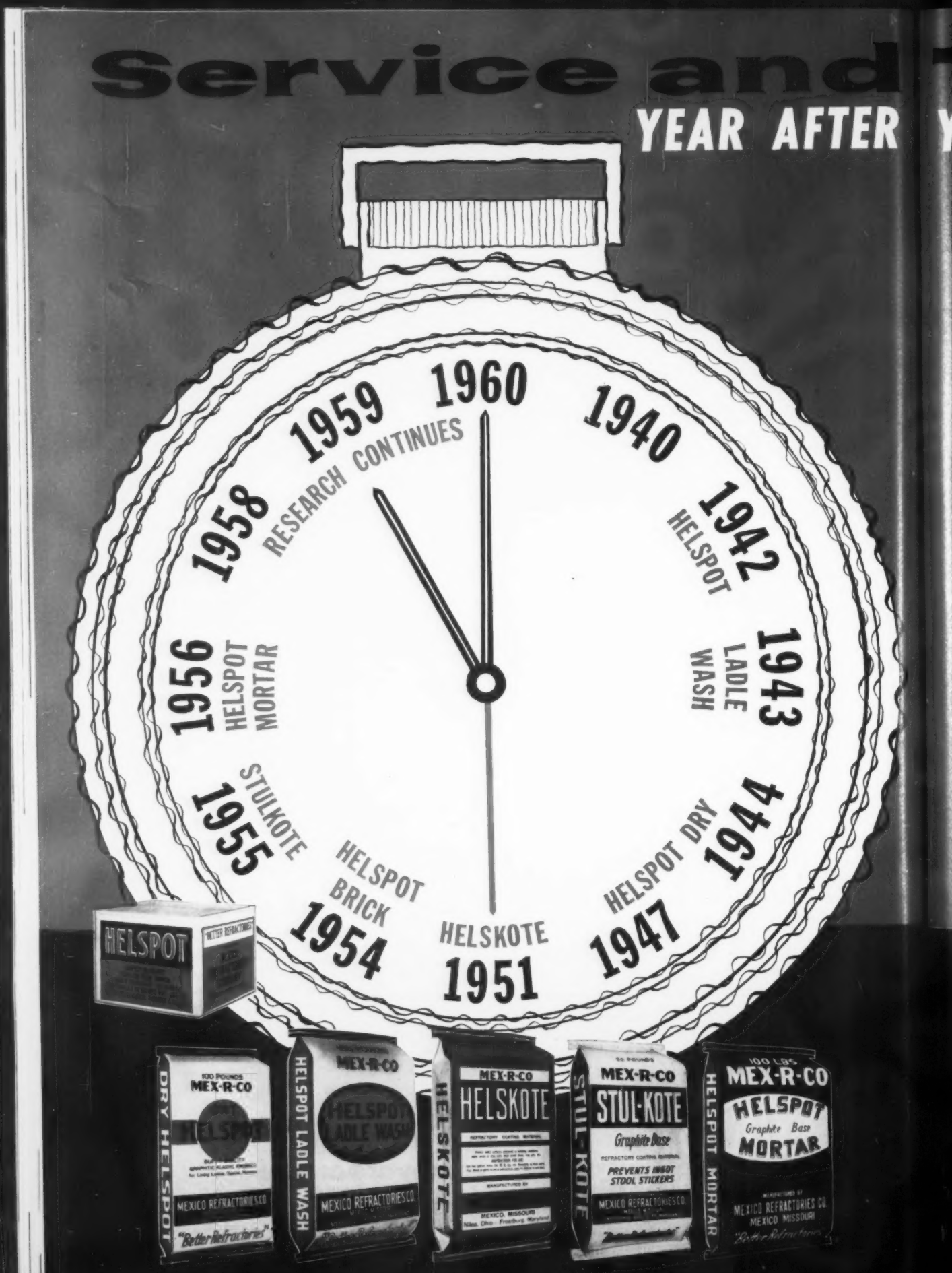
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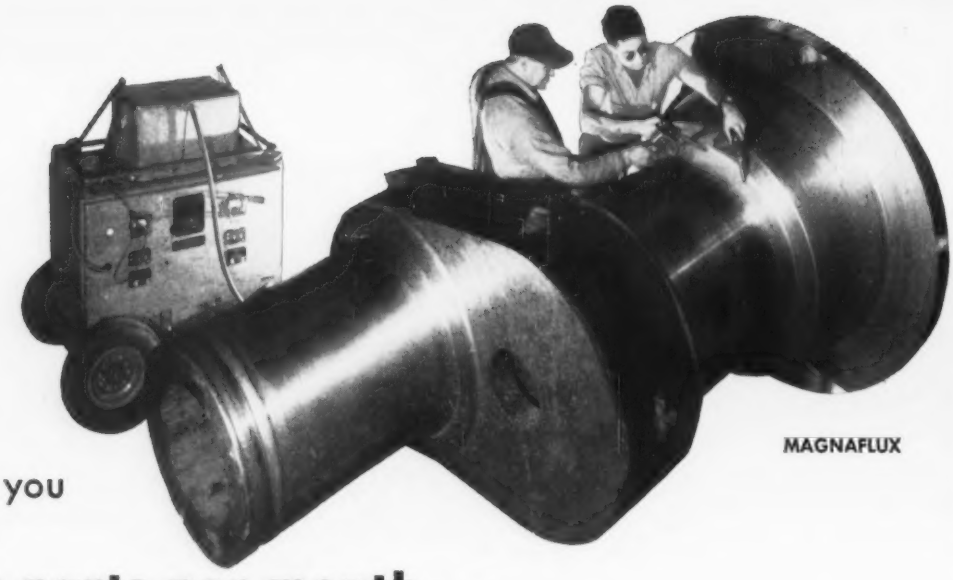

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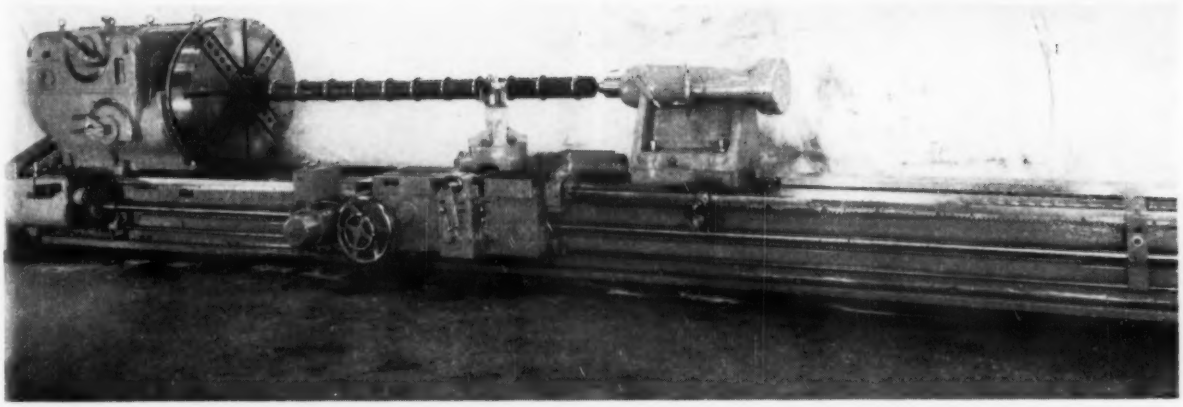


NOW LIKE NEW: Huge lathe (48 in. swing, 27 ft between centers) was badly worn, couldn't hold 0.020 in. tolerance on diameters. Rebuilding at only 40 pct of cost restored end-to-end accuracy to 0.0015 in.

Repair, Rebuild or Replace?

Here's How to Check on Your Older Machine Tools

By **A. L. Rhea**—President, Gahr Machine Rebuilding Co., Cleveland

If your machines are 10 years old, or have been doing heavy production-line work for even shorter periods, they're probably in borderline condition.

But how much "free play" can you tolerate in a machine, and what should you do about it?

▪ With today's high production and close tolerances, badly worn machine tools are a definite liability.

The best way to find whether or not a machine is faulty is to check its performance against the original performance specs. Since the machine isn't new, some variation will be found. Careful checking and analysis will show whether it can be overhauled, whether it needs rebuilding, or whether it must be replaced.

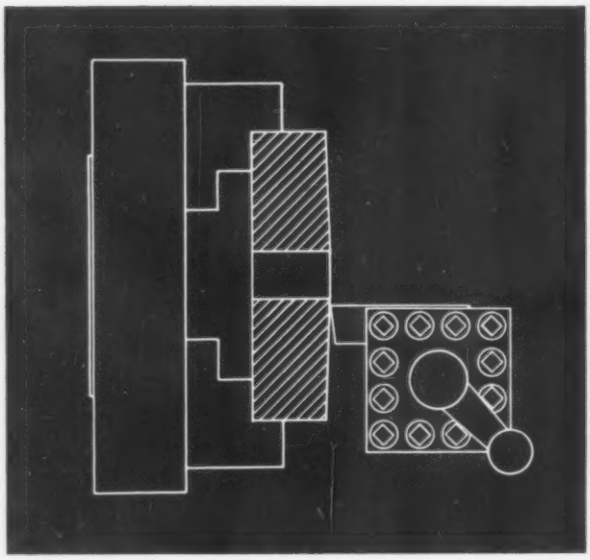
As a rule, overhaul by the maintenance crew means cleaning the machine, repairing or replacing broken parts, adjusting gibs and spindle bearings, and tightening up the machine in general. It'll be in better mechanical shape, but still lacking from a precision standpoint.

The Whole Road—Rebuilding, on the other hand, restores the unit to new-machine performance levels. Quality rebuilders will strip the machine down to the bare bed casting. All gearboxes, and the aprons, headstock, and tailstock are disassembled and inspected for worn parts. All broken or worn parts are repaired or replaced.

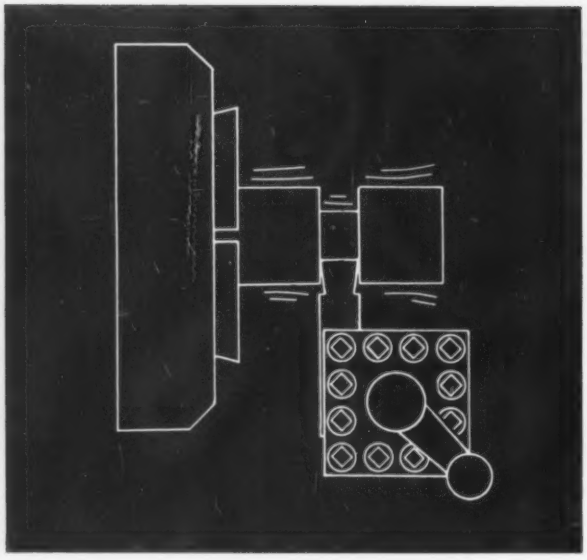
Various parts of the machine such as headstock, tailstock, and cross slide are completely rebuilt, and all sliding ways and gibs are replaced and remanufactured in position. This may mean planing, installing new hardened way strips, and regrinding. In many cases, it includes hand scraping the ways to new-machine flatness and precision alignment with the spindle. Then the other sliding components are scraped in one by one, in each case referring back to the spindle centerline.

When to Replace—An honest rebuilder will urge against rebuilding if a machine isn't worth it or if later models are so superior as to make rebuilding a poor investment. Also, if replacement cost is low or rebuilding cost is 50 pct or more of what a newer model would cost, higher output of the newer design usually warrants buying instead of rebuilding.

An example of low-cost machines which a good rebuilder will not touch are certain lathes and milling machines. A new milling machine costs less than $2000. It'll cost about $1000 to rebuild one. Yet, a used machine will almost always bring $500. Therefore, by selling



Problem: Taper in facing cuts. **Solution:** Scrape cross-slides to make them perpendicular to spindle centerline. Cuts can be highly accurate.



Problem: Chatter. **Solution:** Reset or replace spindle bearings, scrape all gibs and slides, install new cross-slide screws and nuts.

the machine for $500 and saving the rebuilding cost of $1000, only $500 more will buy a new one.

Old-Style or New—Records and tests may show that a machine must be rebuilt if it is to remain productive. But before the decision is made to rebuild it, a very important point should be considered: Is it worth rebuilding?

At Gahr Machine Rebuilding Co., a basic factor is whether the machine is an old-era or new-era machine. Old-era tools include both belt-driven and individual-motor-driven units. Usually, they have plain bearings, large exposed gearing, a bare minimum of electrical controls, no electronic devices, manual adjustments, and often no rapid traverse. New-era machines nearly always have top-quality bearings on spindles; alloy steel gears; and hydraulic, pneumatic, or electrical controls and actuating devices.

New-era machines can usually be modernized. They can have their speeds increased as much as 50 pct to meet carbide tool requirements. They adapt readily to automatic work loading and unloading devices, and can be equipped with automatic centralized - lubrication systems.

Generally, old - era machines should be run only until they can be replaced. But a new-era machine may well be worth the cost of rebuilding, which will restore it to new-machine tolerances and mechanical performance.

Find Its Real Age—One of the first steps in analyzing the machine is to determine its chronological age and its service age. Estimates of age aren't reliable. The only sure way, if the machine was purchased new, is to look up the purchase records. If that fails, or if the machine wasn't new, take its serial number and check its age through the manufacturer.

Even more important than chronological age of the machine is its service age. A machine which runs one or two days per week on a one-shift basis in a tool room gets only a fraction of the wear and abuse received by a machine which runs two or three shifts every day in production.

Service age, a relative figure, is found by multiplying chronological age by the number of full shifts of use per day which the machine has averaged over those years. A 10-year old machine used in a tool room might have a service age of 2 or 3 years. A 10-year old production lathe run two or three shifts per day might have a service age of 25 years. Here again, written records offer the only reliable data.

Note Past Damage — Maintenance records are also important to a thorough analysis. If a machine has had serious accidents, or inadequate preventive maintenance, the records should indicate either or both. On a lathe, this may mean running a cross-slide into the head, cracked castings, or stripped lead screws. On a punch press, accidents include the number of times the press has been locked on dead center and if the ram or frame had been cracked or broken.

Machines may also be dropped and damaged during moves; lift trucks may run into them; and bearings may freeze up. Any fair amount of repair work should be detectable in purchasing records and/or time records.

Check on Former Work—Such records are also the best clue to how long it has actually been since

the machine received major attention. If it was more than 10 years ago it should be disregarded. If a "complete overhaul" has been performed within the last three or four years, it is worth checking to find out how much was done.

Was the work performed only minor repairs, or did it include realignment of bearing surfaces? Was it done by a competent rebuilding firm, or by shop maintenance people pressed into machine repair work and using only the tools and experience that happened to be available?

Generally speaking, all machine tools should be rebuilt to original performance specs about every 10 years or sooner.

A test run will show whether overall machine performance is within required limits. If it isn't, or where existing records already indicate that machine capability is down, start checking the condition of bearings and other parts.

Tests For Bearings—Many people assume that bearings will last the life of a machine. Bearing life is based on three things: tolerance requirements, length of service and extent of maintenance. Spindle bearings are high-production bearings; they do not have perpetual life and should be replaced quite often. If spindle bearings haven't been replaced for a number of years, chances are good that they need prompt attention.

Hand spinning of a spindle is no test for a bad bearing. Check for noise while the machine is running to spot bearing and head-gear damage. Noise in the headstock of a lathe, for instance, may indicate bad bearings or bad gears.

To pinpoint the problem, many machine mechanics use a doctor's stethoscope. It helps locate the origin of noises, and is sensitive to noises that may be almost inaudible to the unaided ear. In fact, machine rebuilders often use a stethoscope to check their work after a machine is rebuilt.

Measure The Play—A basic test for proper spindle-bearing adjustment is to insert a small piece of bar stock into the hollow spindle of a machine. With a dial indicator, set up against the outside of the spindle, apply vertical pressure to the bar to move the spindle up and down in its bearing seat. The normal amount of movement is from 0.001 to 0.0015 in. When pressure is removed from the bar stock, the bearing should again centralize. Movement of 0.002 in. or more means the bearings have had excessive wear and need adjusting or replacing.

Bearings should also be tested by taking up the adjusting nuts so they're quite snug. For a handle to turn the spindle, clamp a small piece of bar stock in the chuck so it projects at a right angle to the spindle. The spindle can then be turned by hand. It should rotate slowly but very smoothly if the bearings are in good condition.

Gears and Shafts — When mechanical tests are being made, all speeds and feeds on the machine should be run; if possible, one gear train at a time. For instance, a lathe should be run in each of the available speeds. Each of the feed and thread combinations through the lead screw and feed shaft to the carriage and saddle aprons should be tested, one at a time.

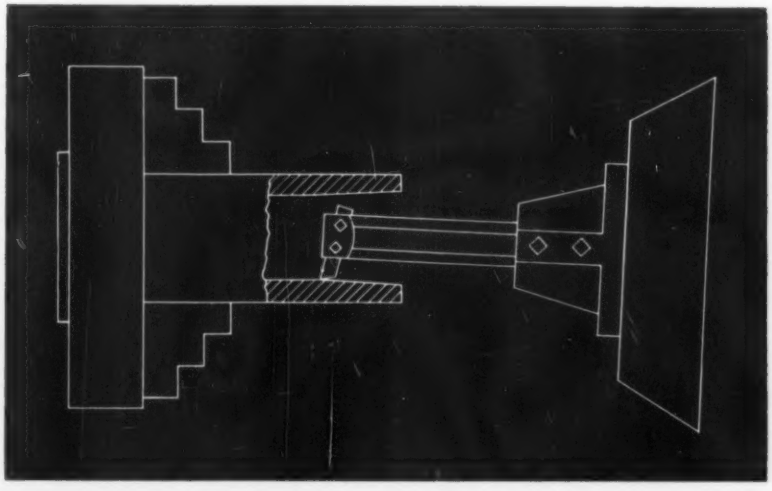
All parts should be checked for wear and play; gears checked for backlash; gibs for wear and remaining adjustment. The head should be opened and internal parts removed. Inspect each gear for missing or badly worn teeth.

Ways and Slides — One of the simplest and most useful tests for a lathe is cylindrical turning. Take a roughing cut and a couple of finishing cuts, the last one very light, on a piece of bar stock. A smooth finish should be obtained. If the bed is twisted or not aligned with the spindle, the test piece will be larger at one end than at the other.

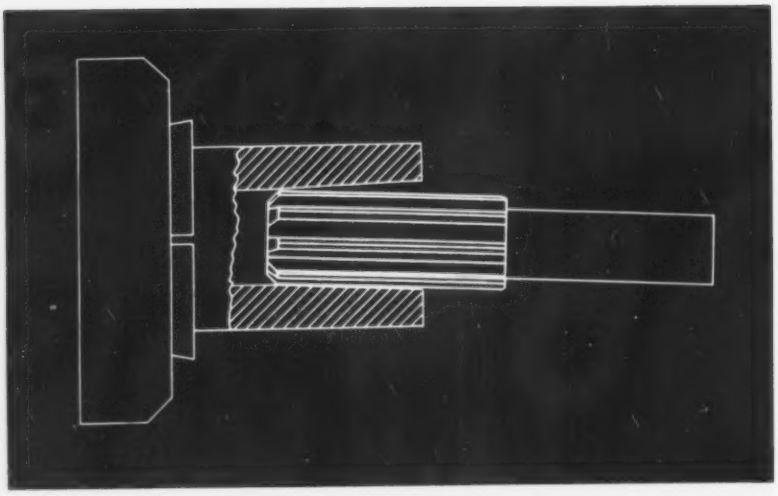
If the test piece is long enough, a worn bed may be indicated by the work being larger in the center than at the two ends. A bed will wear most in the most-used work area. It isn't practical to directly correlate the degree of bulge in the turned part with the amount of wear in the bed. But a bulge of this type does show that the bed is worn.

Test turning cuts should be made both with the bar stock mounted only in the headstock and with the bar between centers. The latter is a good check on alignment of the tailstock with the head.

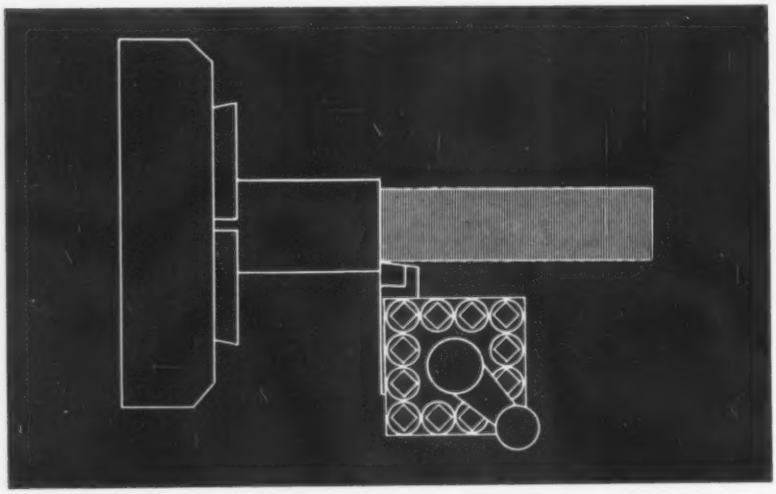
For Other-Type Lathes—On a turret lathe the turning cuts should be made both from the square turret on the cross-slide and from the



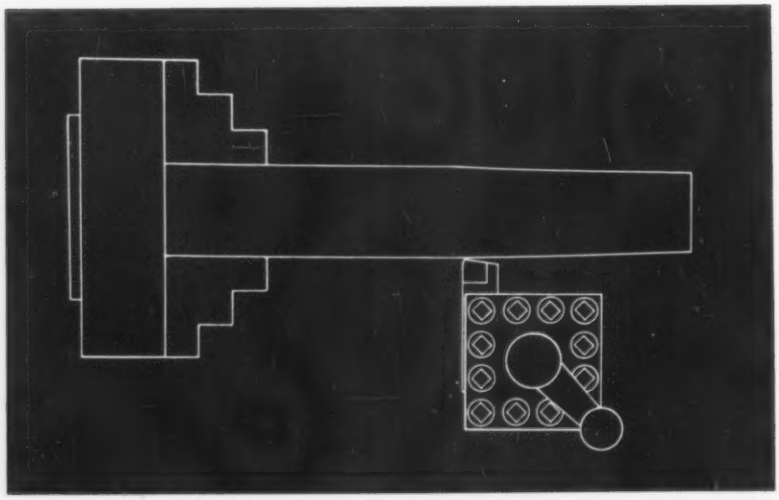
Problem: Tapered boring cuts. **Solution:** Scrape all slides to align precisely with spindle. No tapers without a taper attachment.



Problem: Bell-mouth reamed holes. **Solution:** Re-align spindle and turret.



Problem: Poor surface finish. **Solution:** Eliminate all loose fits, make sure spindles, slides and turrets are rigid.



Problem: Taper in turning cuts. **Solution:** Scrape or grind ways so that they are accurately aligned with spindle.

hex turret. These tests combine to indicate the alignment of the turrets and the spindle, and the condition of saddle and bed for a saddle type lathe, or the condition of the ways between saddle and ram of a ram-type lathe. An overhanging turning tool, projecting as far as possible, should be used. It magnifies misalignment.

If the cutting tool is mounted so that it moves along the top of a test piece being turned, the usual type of wear in the ways will produce a turned part that is smaller at the chuck.

Cross-slide alignment is checked by making the same turning cut and a facing cut. For a facing cut the test piece should have as large a diameter as the machine will swing.

When cross-slide ways have worn considerably in the center, there will be excess looseness when the slide is in that area and tightness when it is at either end of its travel. If the gibs have been adjusted frequently to take up wear, the cross-slide may actually jam at both ends. This shows badly worn dovetails.

Seek Expert Advice—While tests such as these help identify the need for rebuilding, it's always best to call in a qualified rebuilder to check the machine. From experience, he'll know what needs special checking on a given type, make, and model of machine. He'll also have checking devices for more accurate tests, will know what kind of trial cuts to make, how to check them, and what they indicate.

Finally, he can tell how long the machine would be out of production for rebuilding, and what level of labor and material expense would be needed to restore the machine to its original operating condition.

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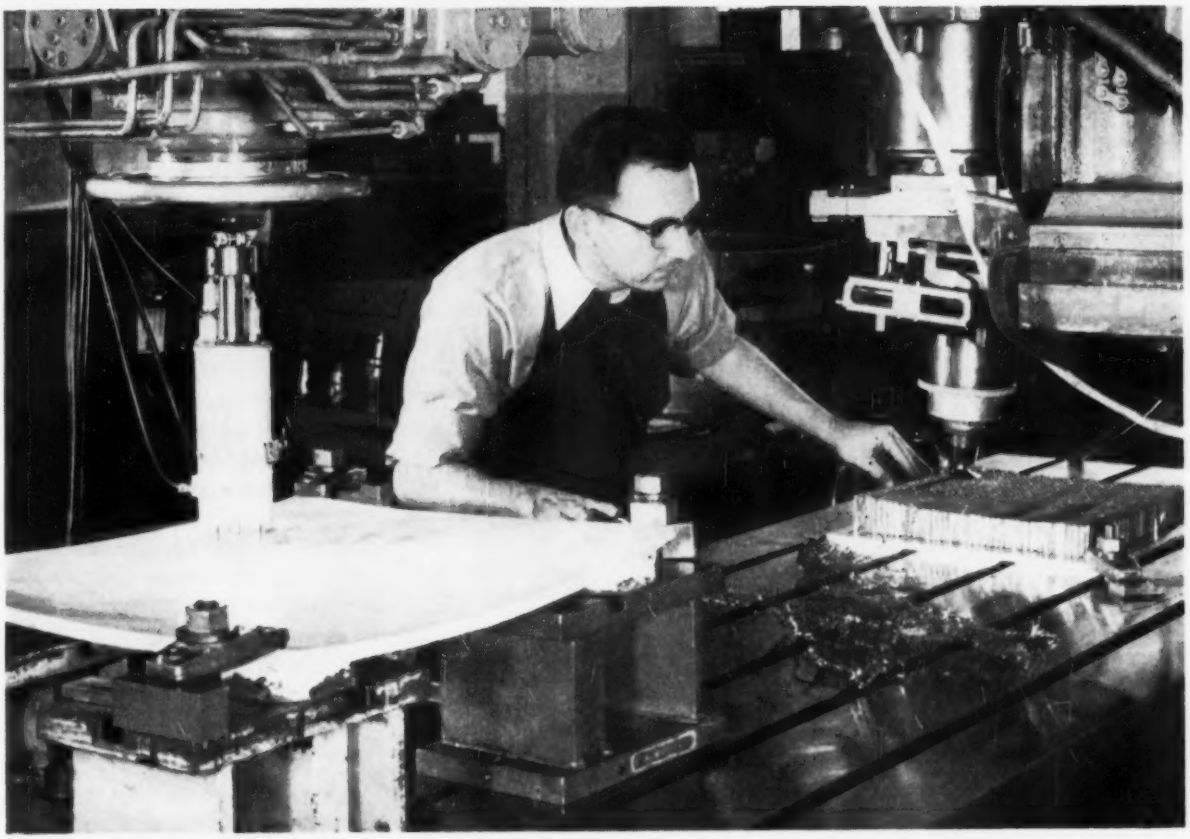


PERFORMS A DANCE: Dubbed "Hula Head," cutting unit (right) follows special stylus (left) to machine contour shapes from honeycomb core material. Stylus converts three-axis unit to five-axis operation.

Flexible Machining Head Shapes Curved Honeycomb Cores

Applying a versatile dance-like motion, a new machining head solves a problem of contouring honeycomb cores.

▪ Machining a compound contour in honeycomb core material is no easy job, even with a filler to make the core rigid. But now a new portable machining head provides a machining breakthrough.

It performs the operation to required tolerances and finish without the use of a filler substance. The portable head, along with a modified stylus, converts a standard three-axis controlled cutting machine to a five-axis operation.

Five-Way Motion — During cutting, the stylus, which has five pick-up points, rides the surface of a wooden or plaster contoured model. It transmits rise, fall and tilt motions to the cutter head.

The knife edge on the cutter head, in turn, performs duplicate motions in cutting the honeycomb core. The setup proves very effective in accurately producing both concave or convex compound core sections.

The cutter head tilts ± 10° in two perpendicular directions. There's a common focal point on the centerline and end of the cutter.

Combine Methods—Tracer controls consist of a combination pneumatic, hydraulic and electronic setup. An air motor developing 12,000 rpm supplies power.

Inventor of the unit is C. B. Jenkins, senior manufacturing engineer, The Martin Co., Baltimore Div. On watching the setup in action, company manufacturing shop personnel dubbed the new cutter "Hula Head" to describe its versatile motion.

Double Chromium Plate Gives Lasting Protection, No Burn

A new duplex plating is a natural for automotive trim and hard-to-protect zinc-base die castings.

Its unusual corrosion resistance is bound to attract an unlimited variety of metal-working applications.

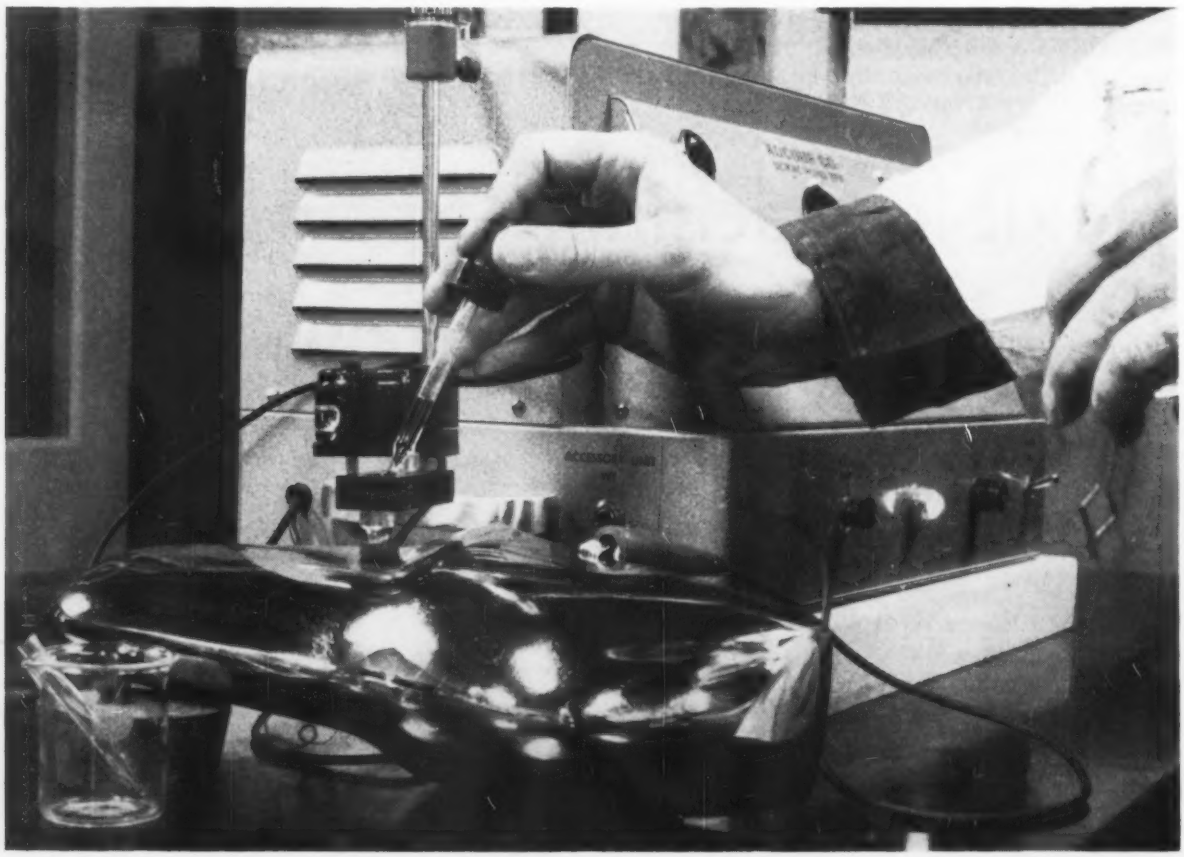
▪ Duplex chromium plating is a new approach to the production of thicker, more corrosion-resistant chromium deposits. Such deposits have actually increased corrosion resistance by more than 500 pct. Equally important, the process can be readily adapted to existing production facilities with only minor modifications.

The new process was developed by Metal & Thermit Corp., New York. Several years ago, the same company introduced a chromium plating bath that produced a thicker and more corrosion resistant deposit without cracking. This deposit had a satin finish and was suited for industrial purposes. But for most decorative purposes, it required buffing.

Two Features—The next logical step was to produce a coating that was both bright and crack-free. A bath was developed for this purpose. In addition to its principal characteristics, it was also found to have unusual covering and throwing power. Essentially, it was able to provide thicker chromium in recesses.

Further research uncovered the advantages of a duplex combination. Plating a cracked chromium coating over a crack-free deposit resulted in unique corrosion resisting properties. The reason for this unusual improvement: the structure of the chromium as deposited.

Specifically, the duplex process consists of an initial application of bright, crack-free CF-520 chromium for optimum buildup in low current density areas. This is fol-



TESTS SHOW THICKNESS: Bumper guard with duplex chromium plate goes through laboratory measuring.

lowed by a second bright deposit of finely cracked chromium from a specially operated CR-110 bath.

Eliminates Buffing—In this duplex process, each of the two types of chromium has different physical characteristics. Neither deposit requires buffing.

The corrosion of plated automotive trim parts is due to the rapid pinhole rusting and blistering attributed to electrolytic cell action. This is more or less the reverse of depositing metals. Basically, the corrosion is a stripping action where the rate of penetration and removal of metal is dependent upon the cell potential.

The higher the cell potential (voltage), the more rapid the rate of stripping or corrosion. Since electroplated metals do not normally bridge defects, a few isolated spots corrode rapidly because all the cell potential is concentrated at these defective spots.

Better Protection—When a finely cracked chromium is deposited on top of crack-free chromium, there results a very low rate of corrosion —or none at all. The many cracks over the entire surface disperse the cell action over a large area. There is a substantial reduction of current density at each of these many individual openings. Thus current density is kept below the critical potential required for anodic perforation of the underlying metals.

A single thick layer of crack-free chromium upgrades corrosion protection significantly. But a second deposit of finly cracked chromium has been found to extend the CASS (copper accelerated, acetic acid salt spray) test performance with 0.1 mil of chromium to about 200 hours.

Zinc Stands Up — Corrodkote tests, normally stopped after one cycle, were run six complete 16-hour cycles to reach the same degree of failure.

Zinc-base die castings are more difficult to protect than steel. They contain more voids and imperfections. Plating baths cannot bridge all the surface imperfections. Yet, the new duplex process is producing improvements of 100 pct or more in corrosion resistance on regular production run die castings.

One large die cast plater, who formerly plated with 0.01 mil of chromium on normal undercoats, had only 10 pct of his parts pass a 16-hour CASS test. Now, with duplex chromium, over 80 pct of the parts pass a 32-hour CASS test.

As might be expected, results of this sort are particularly attractive to the automotive industry. Many producers of electroplated parts for the industry are now using the process in production. Others are studying the process for possible future application.

Auto Parts Next—The plating of ventilator window frames are a typical example of how duplex chromium serves the automotive industry. A changeover from ordinary to CF-520 chromium has increased minimum thickness from 0.007 to over 0.03 mils. Failures were common in the area of minimum current density before the changeover. Formerly, the chromium thickness on these frames varied from 0.007 to 0.07 mils, a ratio of 1:10.

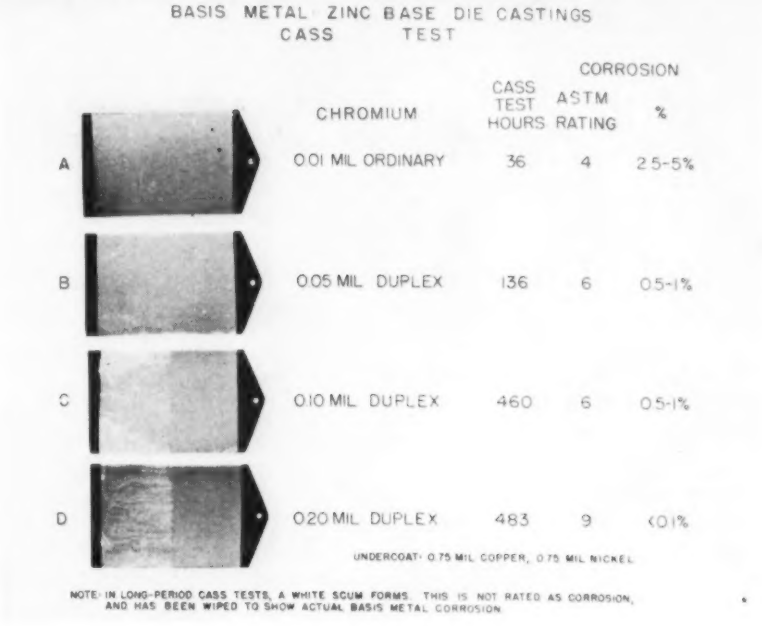
With CF-520, the thickness ranges from 0.03 to 0.12, a ratio of 1:4. Production time remains the same (5-¾ minutes), but additional power is required.

Adding CR-110 on top of CF-520, the thickness in the minimum current density area totals about 0.058 mils. No effort was made to periodically check the high current density areas, although it was known that the maximum thickness ranged over 0.1 mils without burn.

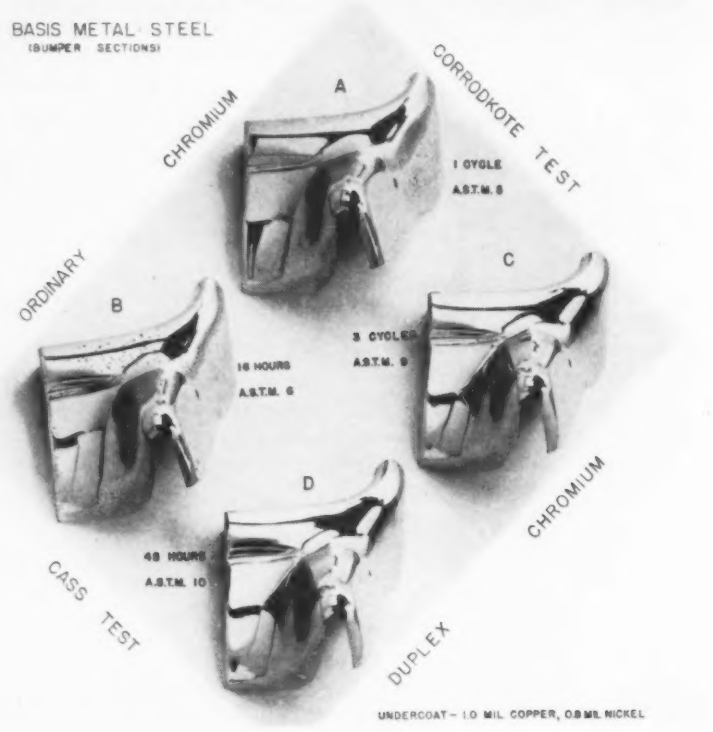
Change Ratio—On a tail light section for a luxury car, the ordinary chromium plate thickness varied from 0.006 to 0.085 mils. With adoption of CF-520 chromium, the variation from lowest to highest current density areas is 0.059 to 0.139 mils. This is a change in ratios from 1:12 to 1:3. Four minutes of additional plating time in CR-110 added an extra thickness of 0.032 mils.

The back-up light section for a high-production, low-price car formerly ran from 0.006 mils in the low current density area to 0.045 mils in the high current density

ASTM Rating Shows up Duplex Protection



Duplex Plating Withstands Rugged Testing



area. Now with CF-520, thickness runs from 0.024 to 0.063 mils—a change from 1:8 to 1:3 in terms of ratio.

In this particular job, where several different jobs were run simultaneously, the area on the plating racks varied from 4 sq ft up to 13 sq ft. Constant current adjustments were required along with segregation of work to keep misplates down to 28 pct. With CF-520, the generator output is set at maximum and left there. The work is mixed—and rejections have been reduced by 90 pct.

Thickness Improves—Zinc-base die castings have more corrosion problems than formed steel parts because of surface imperfections. Yet, one manufacturer reports substantial improvement in CASS tests as a result of duplex chromium plating. The duplex process raised corrosion resistance over that of other dual combination and single chromium deposits — even when these were equivalent to or more than dual chromium thicknesses.

Duplex chromium now yields a minimum of 0.03 mils of chromium in difficult recesses without increasing plating time. Previously, it was virtually impossible to plate even 0.01 mils in such recesses.

This is how duplex chromium is now operated in production. First, CF-520 is plated for a minimum of 4 minutes. Average current density is 1.5 amps/sq in. at 8 v. Tank temperature is 120°F. This is followed by a reclaim rinse and a water rinse. Then follows a 5 minute plate in special CR-119 solution at about the same current density and tank temperature. Voltage ranges from 7.5 to 8 v.

No More Burning — This procedure plates a total of about 0.1 mils of chromium in the average current density areas. Far greater thickness is achieved in the low current density areas than was previously possible. One other major advantage: there is no burning in the high current density areas.

If available equipment does not have sufficient length for a second chromium tank, a separate tank can be used for the CR-110 solution. If the work dries between these operations, parts should be soaked for 3 to 5 minutes in an alkaline electro-cleaner at 180°F. Cleaning is followed by two cold, running water rinses and the final chromium plating operation.

On parts such as automobile bumpers, usual maximum current density short of burning the chromium is about 150 amps/sq ft. With CF-520, current can be boosted to as high as 420 amps/sq ft without observable burning. Still, it is possible to plate successfully with current as low as 120 amps/sq ft. This unusually wide bright plating range makes it practical to produce bright deposits in recessed areas with no burning at the points of high current density.

Salvage Rejects — An additional production advantage of duplex chromium is its ability to re-plate rejects. This cannot be done with ordinary baths.

In one production installation, a number of automatic machines used for plating exterior zinc die castings have been converted to CF-520 in order to achieve increased chromium thickness specifications. Second chromium tanks for CR-110 were installed. The plating time in each bath varies but does not exceed a total of 10 minutes in both baths.

In some machines, these changes are readily accomplished by simply removing the drier from the machine. This space, in turn, is utilized for the additional CR-110 tank. The drier is then set up on the conveyor line that removes the parts from the machine in the inspection department.

A large manufacturer of bumpers plans to add an auxiliary chromium plating machine to his present installation to utilize duplex chromium. Tests showed that he could raise the thickness in his minimum current density areas from 0.006 to 0.021 mils. This was done by raising his ordinary high-temperature, high-ratio bath to CF-520 in the existing machine.

Diesel Setup Fits Standby Needs

It's comforting to know that a standby system can take over in event of power failure.

Here's how a steel company makes its diesel pumping setup pay its own way.

▪ A 12-cylinder dual-fuel diesel engine fills a vital twin role for a steel mill. Its normal assignment is the relieving of peak electrical loads by providing crucial cooling water to the openhearth furnaces.

But of even more importance, the engine supplements the electric-driven pumps when the latter either require maintenance or are put out of commission by electrical storms.

Pays for Itself—At the time the engine was ordered two years ago, a top executive of the company, Lukens Steel Co., Coatesville, Pa., told plant engineers, "If this engine comes through just once, it will have paid for itself." Now Lukens engineers attest to the fact that it has more than earned its keep in operating more than 195 full days since installation.

The diesel unit, made by Alco Products, Inc., Schenectady, drives a 20,000-gpm centrifugal pump. An inexpensive galvanized steel building, adjacent to Lukens' 20-million-gal settling reservoir, houses the setup.

Serves in Water Cycle—In pumping service, the engine handles a water cycle beginning in the Brandywine Creek downstream from the plant. Normally, two of three ac-motor driven pumps, each with a 10,000 gpm capacity handle the water supply chore.

With either the motor-driven pumps or the diesel on the line, water is drawn from the reservoir and pumped a mile to the plant. The water not only cools the openhearth doors, but fills all plant requirements for processing.

By supplanting the motor-driven pumps when plant electrical consumption starts to peak, the diesel effectively cuts into overall power usage. The resulting annual savings in releasing 1300 hp from the power load are substantial.

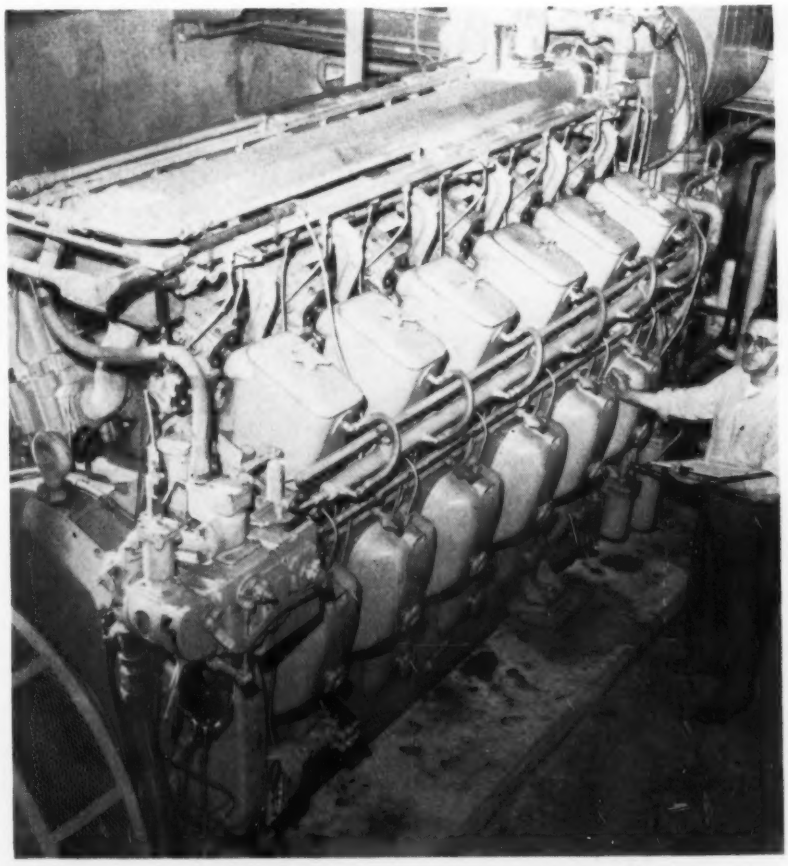
Meets Crisis — Only 11 months after the diesel was placed in service, a severe electrical storm knocked out the central transformer station. The safety factor in this case was the diesel setup.

Engineers had established a standard rule that the engine be started and on idle every time an electrical storm began. The engine immediately took over the task of supplying crucial water to furnaces and prevented damage that could have run into thousands of dollars.

Takes Full Load—During a major expansion project, the company utilized its diesel setup to take over pumping. It permitted shutdown of the electrical pumps while electricians revamped the plant's electrical circuitry.

The dual-fuel unit burns diesel oil alone during starting. It then runs on 93 pct natural gas blended with 7 pct diesel oil.

The engine drives a close-coupled water pump supplied by Dravo Corp., Pittsburgh. There's no need for reduction gears as speed and torque characteristics of both engine and pump are suited to the job.



SAFETY FACTOR: Diesel setup not only serves to supplement motor-driven pumps, but takes over when power fails.

Punch Retainer Cuts Costs In Die Makeup, Maintenance

Making punches removable has its clear benefits, but the big factor is tool-room costs.

Here's a simplified method that any tool room can set up without complex equipment.

▪ A new concept of removable-type punches and retainers cuts costs in die manufacturing and die maintenance. Developed by the Pivot Punch & Die Corp, North Tonawanda, N. Y., the key feature is a retainer that requires no devices built into it to hold the punch.

Called Cone-Lock, the device is simply seated in a countersunk area to provide die retaining. A hardened backup plate is then mounted between the retainer and the die shoe.

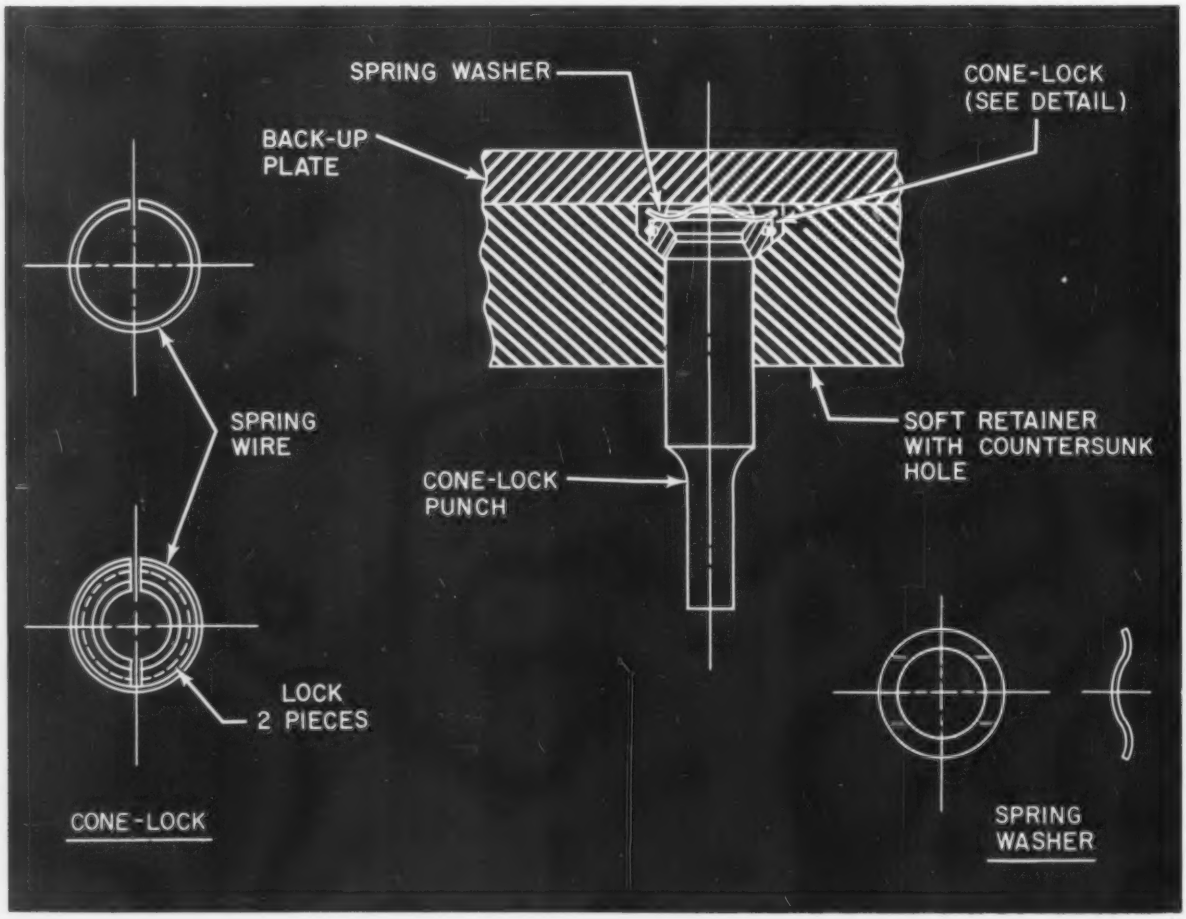
Turn and Pull—The punch locks in place as it's seated. It can be removed by simply turning while pulling downward.

One primary benefit of the retainer is that it needs no hardening. It's made of a tough machinable alloy in the hardness range of 35-40 Rc.

Manufacturing costs are less than for retainers that must be hardened and jig ground after heat treat. For example, the conventional ball-seat retainer requires special drill jigs and jig grinding facilities.

For Any Tool Room—In comparison, the basic simplicity of the Cone-Lock retainer with its countersunk hole makes it easy for any tool room to manufacture at low cost. The punch design for the setup

Retainer Setup: Easy for Any Tool Room



offers as much strength and holding power as a head or shoulder type punch.

A beveled surface runs completely around the periphery of the head section to resist fracturing. It avoids the sharp corners of the head-type punch which can cause fracturing in tough piercing applications.

In one case with the new method, ½-in. diam holes were punched through ⅝-in. thick material. Punch and die clearance was held to a minimum to produce a straight-walled hole.

Withstands Stripping—The operation caused tremendous stripping resistance, but no failure was experienced. The punch remained in the retainer and yet removed easily by turning while pulling.

Companies that use shoulder punches can convert their dies to removable punches at nominal cost. The method will result in savings through reduced press downtime and die repair costs.

With shoulder punches, any repairs to the die must be made in the tool room. When punches become dull, the die must be pulled from the press, returned to the tool room and disassembled for sharpening.

On the other hand with the new method, you can pull dull punches out of the die while the die is in the press. With new punches inserted, the die is back in operation in a matter of minutes.

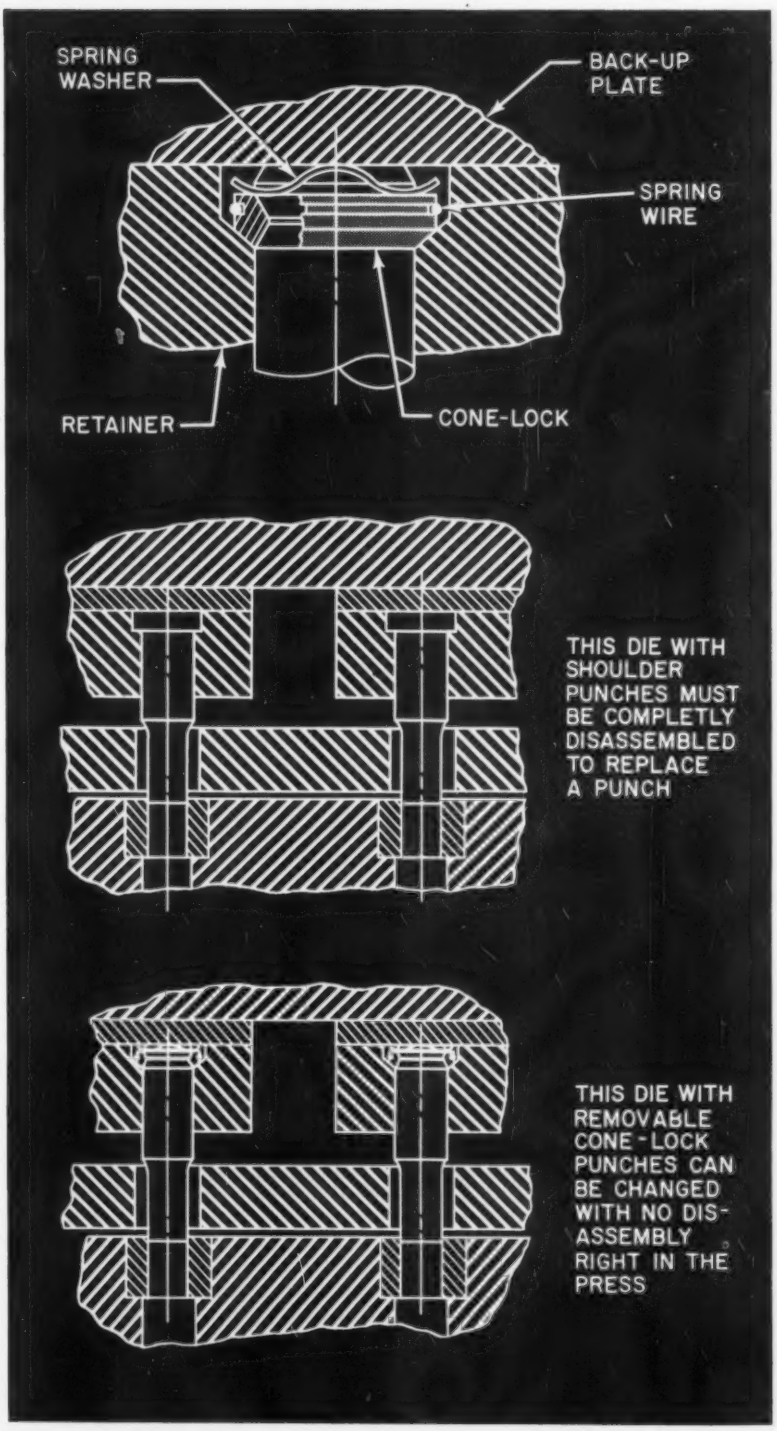
Speeds Changes — Since punch dulling can cause close to 80 pct of all press downtime, the removable punches can result in big savings. It's also true of broken punches.

Mis-alignment, acute stripping resistance, or misfeeds can cause point breakage. The removable punch system speeds replacement.

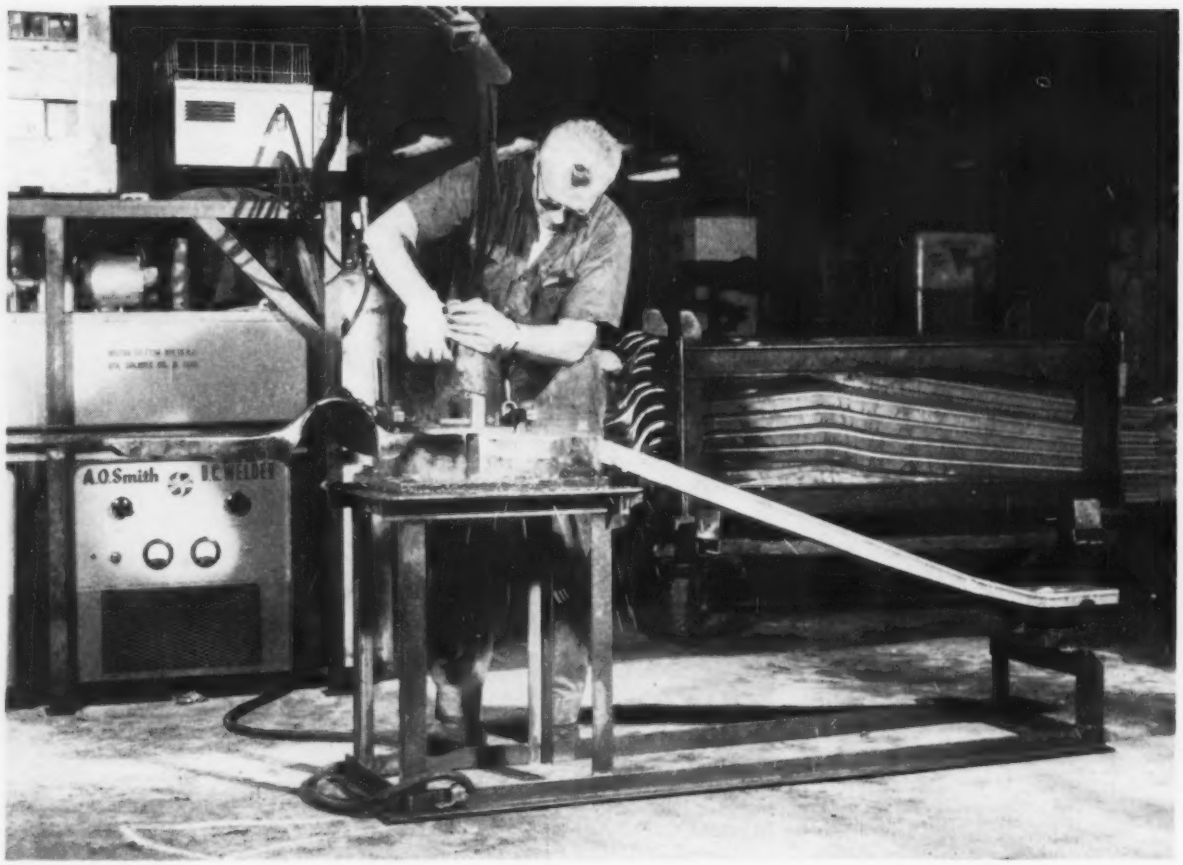
Compared to the conventional head-type punch, the Cone-Lock punch costs about 20 pct less. And punches represent about 90 pct of perishable tool expenditures in the press room.

An additional benefit of the new method over the ball-seat type retainer is that retainer thickness can be reduced. It's an advantage with heavier piercing operations.

Pivot Punch & Die Corp. has the facilities to design and manufacture the new retainer. Also, companies desiring to adopt the method can obtain engineering specifications and templates.


SPRING WASHER
BACK-UP PLATE
SPRING WIRE
RETAINER
CONE-LOCK
THIS DIE WITH SHOULDER PUNCHES MUST BE COMPLETLY DISASSEMBLED TO REPLACE A PUNCH
THIS DIE WITH REMOVABLE CONE-LOCK PUNCHES CAN BE CHANGED WITH NO DIS-ASSEMBLY RIGHT IN THE PRESS

FAST SERVICING: A turn while pulling downward releases punch. Changes are made with the die right in the press, reducing changeover time.



WIDE SHOP USE: Button-weld setup moves easily to work. Welding can be done without elaborate cleaning.

Low-Cost Setup Joins Metal With Rivet-Like Weld

A new welding attachment in the form of a light-weight gun turns out fast uniform welds.

The method even works through oil and grease.

▪ A new low-cost welding method features a finished weld that resembles a rivet or button head. Wide application is expected in the welding of metals from 0.035 to 0.187 in. thick.

Introduced by Welding Products Div., A. O. Smith Corp., Milwaukee, the method features a new "button weld" attachment for the company's CP-C-OManual welding unit.

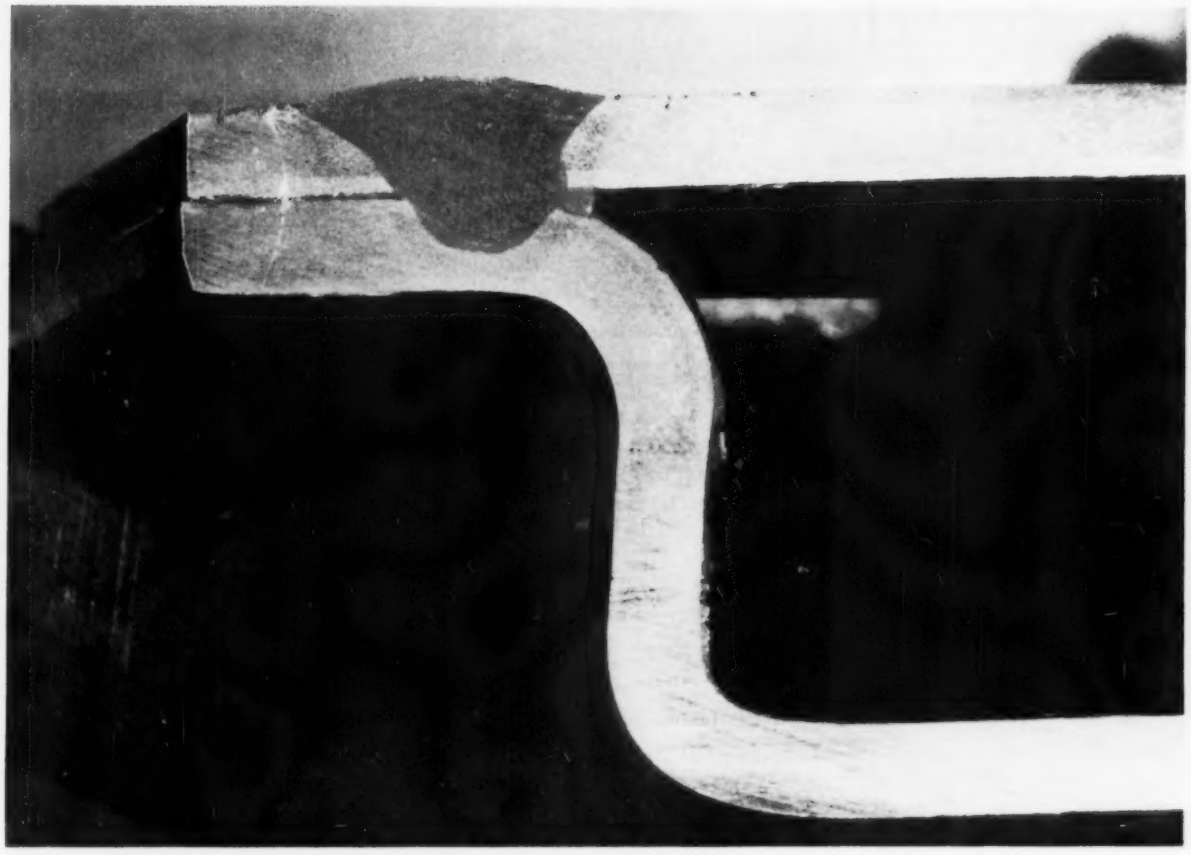
In many cases the new setup will replace or augment conventional resistance spot welding or riveting. Using carbon dioxide as a shielding gas, the versatile process is a precision method of welding.

Controls Button Size — A consumable electrode adds filler metal to the weld. The size of the button can be changed to suit the application. It's done by varying voltage, wire feed speed, or weld current, and the number of time cycles.

The setup eliminates chances of operator error and gives identical welds consistently. Constant-potential power gives good starting characteristics.

The setup adapts well to the timed burn-through method of joining lighter gages of mild steel. It's also useful for tacking together heavier gage sheet and plate in place of manual-arc tack welding.

Another application is found in



UNIFORM QUALITY: Once cycle is set up, operator gets consistent welds. Size of button can adapt to application.

plug welding of heavier sheet metal. Here a hole is punched in the top sheet, a preferred method of joining stock in thicknesses over 3/16 in.

Low Equipment Cost—The portable setup can cost as little as one-tenth the cost of resistance welders. There's also the possibility of using no tooling or very inexpensive fixtures.

Surface conditions of the steel being welded do not seriously affect weld quality, since there's no dependence on surface electrical resistance. Welding can be performed through oil and grease.

With no costly maintenance of tips, maintenance costs are low. The lightweight gun permits high production rates. Large parts do not need to be moved to the welder.

Consistent Quality — Operators can make good consistent welds without special skill or training. The operator merely selects one of three welding nozzles, inserts it and places gun in position.

After pulling the gun trigger, the operator holds it until the welding stops. The arc is struck when the wire touches the workpiece and it continues to the end of the time cycle.

Number of cycles varies from three cycles (1/20 second) to 360 cycles (6 seconds). Nozzles are designed for vertical down, 45°-inside tack, or 45°-outside tack welding.

Quick Conversion—Since the arc shield slips on and off in less than a minute, it's easy for the operator to convert from button welding to semi-automatic welding with the CP-C-OManual unit. The arc shield completely covers the weld area and eliminates the need for wearing a welding shield.

It speeds production and permits the operator to accurately position his welds. Normally, only tinted safety glasses are required to protect against the reflected flash that enters through four small gas outlet ports.

The basic welding setup is suited to lap, fillet and butt welds on materials up to 1½ in. thick. Current densities of 100,000 to 200,000 amp per sq in. lend themselves well to the CO_2 process.

Simple to operate, the water-cooled gun assembly is well balanced, light in weight and provides good arc visibility. Contact tubes are available for 3/64-, 1/16-, 5/64- and 3/32-in. diam wires.

Wire-feed rolls feed without noticeable wire distortion. Each welding unit is supplied with two feed rolls, including one spare, for driving 1/16-in. diam wire. Rolls for 3/64-, 5/64- and 3/32-in. diam wires are also available. A variable-speed motor controls wire drive.

Carburizing Controls Improve Quality of Truck Parts

By **Charles H. Shelton**—Director of Metallurgy, White Motor Co., Cleveland

The dew point method of carburizing control again proves its merit.

A leading manufacturer of trucks points up the advantages of its new carburizing furnace installation.

▪ Gas carburizing has won another convert. This time a continuous pusher-type gas carburizing furnace is replacing several pack carburizing furnaces. In addition to eliminating dirt and manual handling, the new equipment is providing important metallurgical benefits.

Built by Surface Combustion Corp., Toledo, the new 57-ft furnace is now in operation at White Motor Co.'s Cleveland plant. It can carburize 700 lb per hour of ring gears, spider gears, ball studs, king pins, and other heavy-cased parts. These are used in truck transmissions and other assemblies.

Direct Access—The furnace is equipped with automatic conventional oil quenching, martempering, and air quenching. It has a special-design, slot-type door at its back end. This door permits access directly into the furnace, allowing an operator to remove one gear at a time for press quenching. Such access does not interrupt the carburizing cycle or interfere with atmosphere control.

Carbon potential in each zone of the furnace is individually controlled by graduating the dew point of the atmosphere. This is done by reducing the amount of natural gas being added to the RX generated gas.

Six L&N Electromax signalling controllers are used for on-off control in carburizing and draw furnace. An 8-point L&N strip chart recording controller records the temperature in both furnaces and the atmosphere generator. This instrument also serves as a safety cut-off for both temperature and atmosphere.

More Controls—There are ten thermocouples in the carburizing furnace. Five are located on one side and are connected to the signalling controllers. Five are located on the opposite side and are connected to the recording controller. The first three zones are held at 1750°F, the fourth zone at 1650°F, and the fifth zone at 1550°F. A Rayotube indicating controller controls the temperature in the generator.

Except for press quenching, one man operates the furnace. Three 22-in. square trays are placed on the loading platform. These are loaded to a height of about 18 in. The furnace door to the vestibule is actually a plug-type door integrally mounted on the end of the charge car. It withdraws at right angles to the direction of the work travel in the furnace.

The operator places three trays on the car and actuates a button causing the car to re-enter the vestibule. The vestibule is then purged in about one minute. On cycle, the inner door opens. The hydraulic pusher for the number one row pushes a tray into the furnace, advancing the row of trays forward one tray. This action also places a tray at the discharge end in position to be pushed out for oil quenching, air cooling, or press quenching.

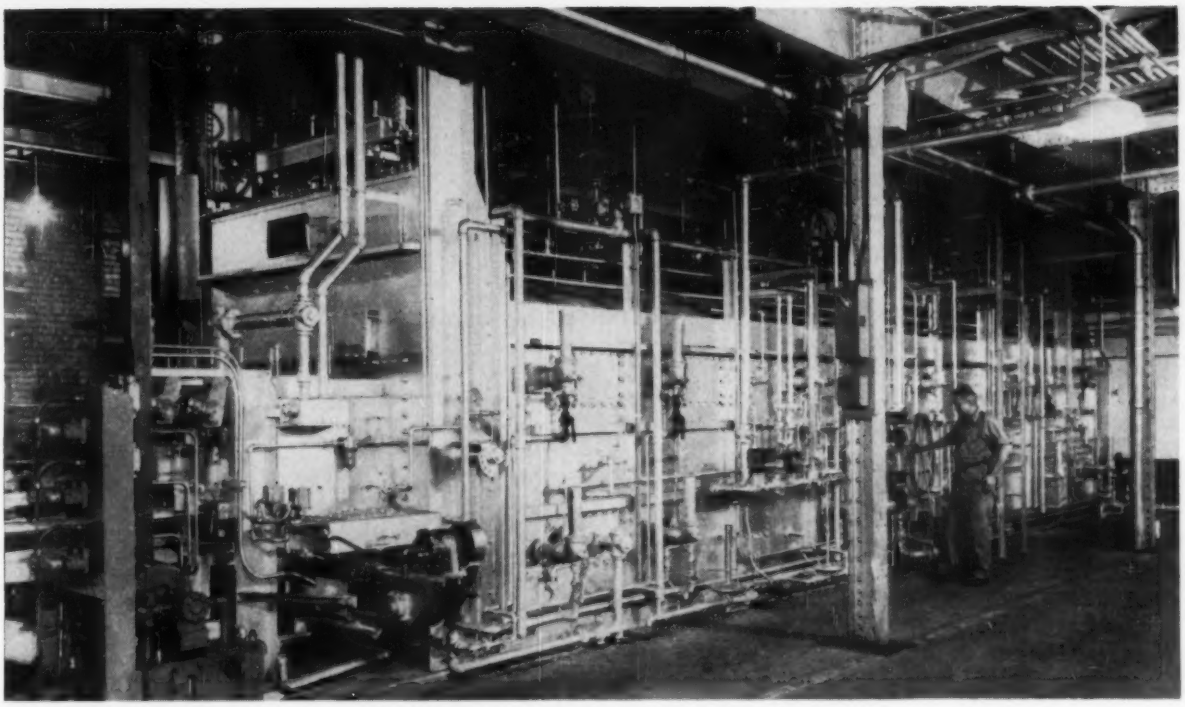
Saves Heat—Certain parts, such as large ring gears, must be manually removed from the furnace to be press quenched. When such is the case, the work is removed through a small door located at the end of the furnace. The door was designed specifically to minimize loss of heat and furnace atmosphere. The slot door arrangement, with movable frame, eliminates the need for raising the work with an internal elevator-type mechanism.

When parts are to be direct quenched, a door at the side of the furnace opens and the side pusher positions a tray load of work on a quench elevator in the vestibule. The vestibule lowers the work into the quench. After the proper quenching cycle, the elevator raises. An air operated dog pullout mechanism pulls the trayload out of the vestibule and on to a conveyor. This then carries the work to a washer and through a continuous air draw furnace.

Special Design — When work is to be carburized only for later reheating and special quenching, the operation sequence is essentially the same as for direct quenching. The elevator raising and lowering is eliminated, however, and the work by-passes the quenching operation.

A two-hour delay is built into the conveyor from the hot-oil quench to the washer. This allows time for the completion of isothermal transformation before parts reach the washing and drawing operation. The conveyor from the quench vestibule travels the work to the carburizing furnace.

It then travels through the washer and draw so that the work



LARGE CAPACITY: With five carburizing zones, this 57-ft furnace provides heavy productive capacity.

reaches a position near the loading station. Design-wise, the line is laid out in a modified "U" shape.

No Retained Austenite — The complete line operates on a 20-minute cycle with a carburizing cycle of 19 hours from loading to quench. The cycle produces a case depth of 0.065 in. at 0.40 pct carbon with a surface carbon of 0.90 pct.

The surface is file hard and the case is free of retained austenite. Quenched hardness of Rc 61-64 and final hardness of Rc 59-60 have been met since the furnace has been in operation.

Much of the consistency of case depth and hardness is due to the zone control of both temperature and atmosphere dew point designed into the furnace. Temperature gradation from loading to quench varies from 1700°F in zones 1 and 2, 1650°F in zone 3, and 1550°F in zone 5. Carbon potential is gradually reduced from loading end to quench by varying the dew point.

This is accomplished by first piping 35°F dew point RX gas from the generator to each zone of the furnace. Natural gas is then added to the RX gas in reduced amounts from zone 1 (4 pct natural gas) to zone 4 (0 pct). Zones 4 and 5 use straight RX generated gas only.

Adjust Dew Points—Addition of natural gas lowers the dew point to —5°F at the first zone, then gradually becomes higher to the point where it reaches 25°F at the quench end. Enough of the lower dew point gas is carried over to the last two zones to lower the 35°F dew point of the RX generated gas to 25°F.

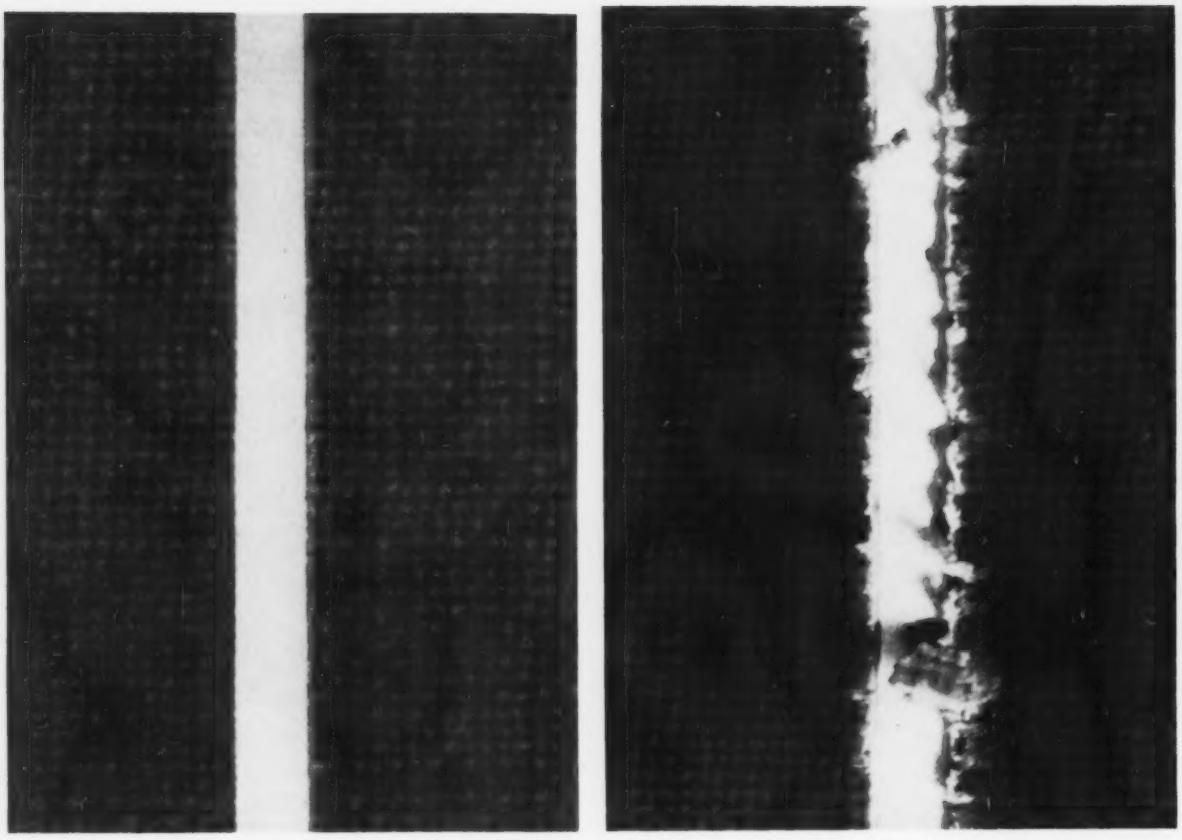
The high carbon potential maintained in the first zone (along with the higher carburizing temperature) results in "humping" the case carbon to over 1.00 pct. This is then diffused in the following zones uniformly to the required 0.90 pct carbon.

Operation of the heat treating line is under strict control of the metallurgical laboratory. All adjustments to cycles, atmosphere dew point, and temperatures are based on actual furnace operation conditions

Double Checks — Atmosphere dew point is periodically tested by dew cup to substantiate the automatic controllers. Gas analyses are also made periodically. Microscopic tests are made daily on test bars run through the furnace. These bars are also step machined and chemically checked for carbon gradation through the case depth.

Every gear is file tested by the operator before releasing it to the finishing department. Since the furnace was first placed in operation, every part processed through this line has been acceptable, including the first trial runs.

Much attention was given to designing the quench tank. With a capacity of 1500 gal, it is fully enclosed and contains two impellers —one at each end to provide forced agitation. Baffles in the tank direct the flow up through the work being quenched. Temperature of the oil is continuously maintained within ±10°F of control setting for best quenching results.



COMPARE EDGES: Blunt backs of teeth cut clean edge (left). Conventional sawing leaves stringers and chipping.

Reversed Saw Cuts Edges Clean

Here's a trick to keep in mind when cutting sheet laminates or thin-wall tubing.

Backward sawing setup boosts production, improves quality.

▪ A simple change in setup increases production, while improving quality when sawing and finishing thin nylon-base or paper-base plastic laminate. All you have to do is to mount the circular saw blade backward.

Backward sawing, in which the blunt backs of the teeth do the cutting, eliminates the stringers and chipping caused in normal sawing. This in turn makes separate hand filing of edges unnecessary.

Taylor Fibre Co., Norristown, Pa., recommends backward sawing for sheet laminate 3/16 in. or less in thickness, and for thin wall tubing of wall thickness 1/32 in. and under.

Boosts Production—To saw and file an 8 by 10 in. panel-base stock 3/16-in. thick requires 68 seconds —48 seconds for sawing and 20 seconds for filing. Eliminating 20 seconds filing time thus increases production 30 pct.

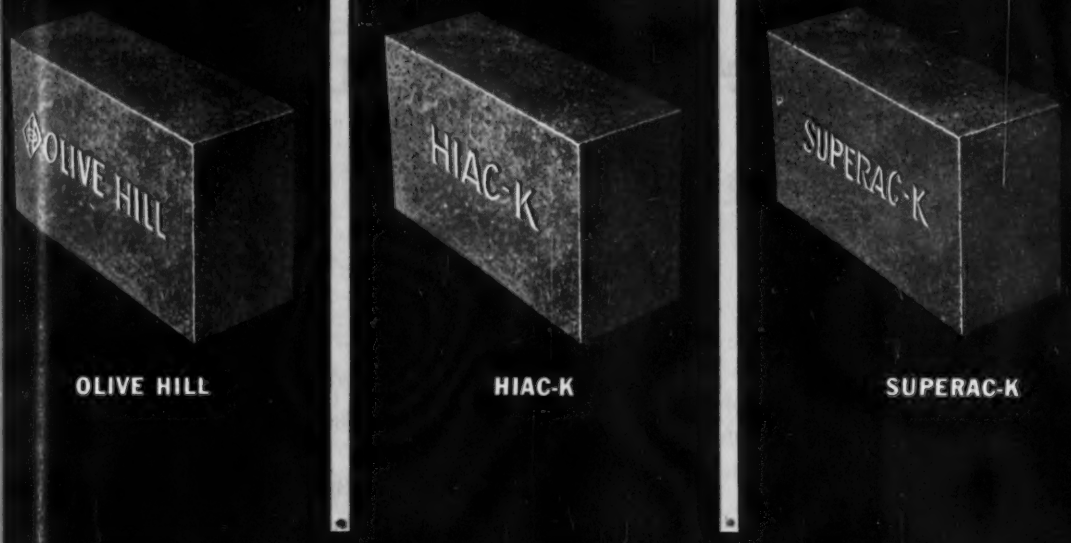
Another advantage is less need for resharpening of the blade. Sawing the thin stock with the back of the teeth can't dull them.

It means fewer stops for removing blade and taking it to a grinder, where grinding time alone averages 12 minutes. Remounting the blade and resetting the fence to correct tolerances also takes time. With the new method teeth edges are preserved for stock more than 3/16 in.

Cuts Rejects—Improved quality and less rejects are a final benefit. The blade mounted backward cuts clean without the troublesome chipping met in conventional sawing.

Taylor Fibre's sawing department foreman, Fred Ledger, reports the new technique is especially helpful in cutting nylon stock, which is noted for producing stringers and chipping even with a brand new blade.

He offers one caution: Don't try the backward-blade method on stock heavier than 3/16 in. It works, but it isn't safe because of the problem of holding down the heavier stock.



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New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy just circle the number on the free postcard, p. 113.

Roller Bearings

A catalog gives useful information on the features, applications, and availability of a company's nine principal lines of roller bearings. (Rollway Bearing Co.)

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Finishing Cost Guide

A supplier of "pre-finished" metals offers a "Metal Parts Finishing Cost Guide" which compares costs involved in (1) on-premises finishing of parts, (2) off-premises finishing of parts, and (3) use of pre-finished metals supplied by the author company. (Apollo Metal Works)

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Multi-Fuel Power Units

A two-page bulletin describes a series of V-12 power units capable of operating on several fuels. The units described develop 550 hp on butane or gasoline, and 450 hp with natural gas. (Hercules Motors Corp.)

For free copy circle No. 3 on postcard, p. 113

Signaling Controller

A four-page catalog describes and specifies a two-position (OFF-ON) potentiometer-type signaling controller for accurate automatic control, using dc signals. (Thermo Electric Co., Inc.)

For free copy circle No. 4 on postcard, p. 113

Pressure Pickup

A pressure pickup is described in a bulletin. This lightweight, hermetically sealed transducer is available in absolute or gage models in pressure ranges from 100 to 5000 psi. (Consolidated Electrodynamics Corp.)

For free copy circle No. 5 on postcard, p. 113

Packaged Compressor

A two-cylinder, heavy-duty packaged field compressor is designed for single or two-stage applications. Sizes range from 200 to 350 bhp. It is described in a bulletin. (Clark Bros. Co.)

For free copy circle No. 6 on postcard, p. 113

Low-Cost Punch Press

A low-priced 10-ton air-hydraulic punch press which operates on 75-lb air pressure is described in a four-page bulletin, along with the tooling and adjustable gaging which permit hole-punching and notching operations to be performed at low cost. (Punch Products Corp.)

For free copy circle No. 7 on postcard, p. 113

Spray Painting Guide

A bulletin illustrates a line of paint spraying equipment, and includes a guide to selection of the proper equipment for every spraying need. A separate bulletin de-

scribes a portable paint-spraying unit. (The Campbell-Hausfeld Co.)
For free copy circle No. 8 on postcard, p. 113

Manufacturing Facility

Machine tools and engineering and design operations of a number of manufacturing divisions of a metalworking company are illustrated in a brochure. Steam equipment, pumps, nuclear components, and similar large machinery are manufactured. (C. H. Wheeler Mfg. Co.)
For free copy circle No. 9 on postcard, p. 113

No-Corrosion Stainless

A folder describes a stainless steel particularly well designed to resist corrosion of hot sulphuric acid. Welding information is supplied. It is available in all forms. (Union Steel Corp.)
For free copy circle No. 10 on postcard, p. 113

Process Heaters

A 64-page catalog illustrates a complete line of electric process heaters and describes their uses. (Edwin L. Wiegand Co.)
For free copy circle No. 11 on postcard, p. 113

Low-Finned Tubing

A new edition of a catalog provides design and cost comparisons of heat exchangers using integral low-finned tubing of the author company's manufacture. (Wolverine Tube, Div. of Calumet & Hecla, Inc.)
For free copy circle No. 12 on postcard, p. 113

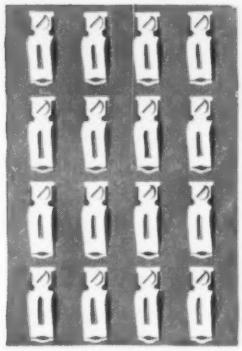
Reed Vibrometer

A hand-held reed vibrometer for checking speed and troubleshooting of machinery is described in a bulletin. Frequency range is 120 to 15,000 cycles per minute. (The Korfund Co., Inc.)
For free copy circle No. 13 on postcard, p. 113

Computer Converter

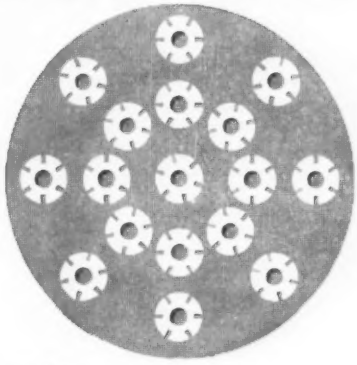
An eight-page catalog describes a shaft-input device that converts and records analog values in digital binary-decimal punched-tape form

Better strip products



from the start with

continuous-cast



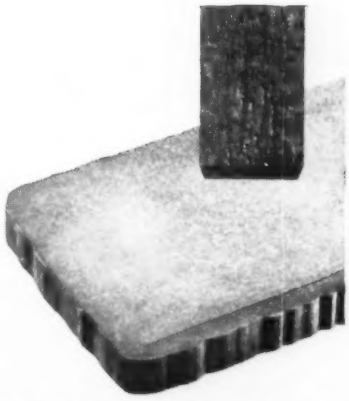
Flexograin phosphor bronze

Uniform, fine-grain Riverside phosphor bronze—Flexograin—is made even better through Riverside's *exclusive* continuous-casting process.

Riverside continuous casting eliminates porosity and assures a dense, homogeneous material that responds more readily to forming and develops uniformly high fatigue properties not attainable with ordinary phosphor bronze.

And Flexograin, being of a naturally finer grain structure, maintains the ductility and smoothness of finish that are unattainable with ordinary phosphor bronze strip.

Send for free Technical Bulletin describing Flexograin and its advantages in your production.
Write to *Riverside-Alloy Metal Division, H.K. Porter Company, Inc., Riverside, N.J.*



Good riddance to "Swiss Cheese" castings! Riverside continuous-cast, dense bronze offers time savings through faster fabrication in addition to improved product quality!

RIVERSIDE-ALLOY PORTER METAL DIVISION

H.K. PORTER COMPANY, INC.

PORTER SERVES INDUSTRY: with Rubber and Friction Products—THERMOID DIVISION; Electrical Equipment—DELTA-STAR ELECTRIC DIVISION, NATIONAL ELECTRIC DIVISION; Copper and Alloys—RIVERSIDE-ALLOY METAL DIVISION; Refractories—REFRACTORIES DIVISION; Electric Furnace Steel—CONNORS STEEL DIVISION, VULCAN-KIDD STEEL DIVISION; Fabricated Products—DISSTON DIVISION, FORGE AND FITTINGS DIVISION, LESCHEN WIRE ROPE DIVISION, MOULDINGS DIVISION; and in Canada, Refractories, "Disston" Tools, "Federal" Wires and Cables, "Nepcoduct" Systems—H. K. PORTER COMPANY (CANADA) LTD.

FREE LITERATURE

and provides digital values in electrical form for telemetering or any other purpose. (Fischer & Porter Co.)

For free copy circle No. 14 on postcard, p. 113

Vibration Pickup

A precision vibration pickup for calibrating vibrators and vibration sensors is described and specified in a bulletin. (Consolidated Electrodynamics Corp.)

For free copy circle No. 15 on postcard, p. 113

Die Facilities, Materials

Four pieces of literature are available from a die manufacturer. One catalog illustrates facilities for producing steel and carbide dies and accessories, and shows some typical products. Another lists guide pins, guide-pin bushings, and stripper guide pins and bushings. A bulletin describes precision bronze-plated wear plates. A pamphlet discusses how to obtain increased die life through proper grinding procedure. (Lamina Dies & Tools, Inc.)

For free copy circle No. 16 on postcard, p. 113

Tumbling Equipment

A 14-page data file contains complete information on a line of tumbling barrels, compounds, and processes. (Tumb-L-Matic, Inc.)

For free copy circle No. 17 on postcard, p. 113

Bronze Electrodes

Repair welding of cast-iron dies with aluminum bronze electrodes is featured in the first quarter, 1959, issue of "Ampco Welding News." Other articles cover welding techniques in various fabrication jobs. (Ampco Metal, Inc.)

For free copy circle No. 18 on postcard, p. 113

Brazing Information

Manual aspects of silver-alloy brazing are discussed in Edition #81 of "Brazing News." (Handy & Harman)

For free copy circle No. 19 on postcard, p. 113

Flush Pressure Plugs

Pressure plugs which seat flush are described in a bulletin. A controlled taper provides positive leakproof sealing without compound. They are available from 1/16 to 1¼ in. (Standard Pressed Steel Co.)

For free copy circle No. 20 on postcard, p. 113

Mn Wrought Iron

Manganese wrought iron (about 1 pct Mn) possesses resistance to corrosion, and resists impact at low temperatures. It is described in an eight-page booklet. (A. M. Byers Co.)

For free copy circle No. 60 on postcard, p. 113

Welding Machines

Two new models of air-operated, press-type welding machine—a spot welder and a projection welder—are described in an eight-page brochure. The latter is convertible to spot welding. (Sciaky Bros., Inc.)

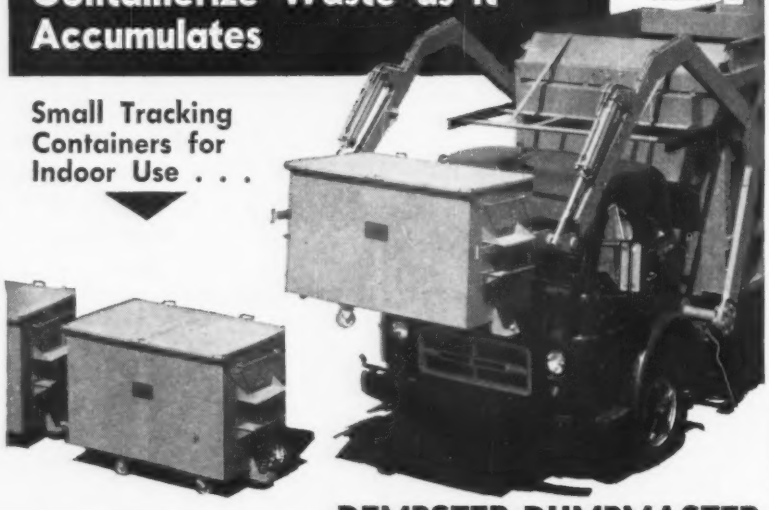
For free copy circle No. 61 on postcard, p. 113

cut disposal costs by two-thirds . . .

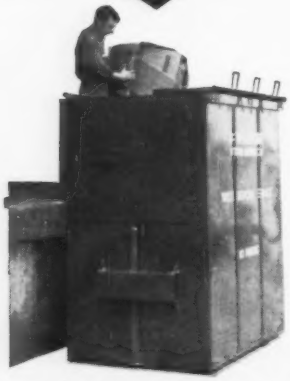
Containerize Waste as it Accumulates

Patents Pending

Small Tracking Containers for Indoor Use . . .



Large Containers for Outside Use



DEMPSTER-DUMPMASTER Handles SIX Sizes of Detachable Containers

Small one, two and three cubic yard tracking containers, which are towed, in train, to indoor waste accumulation points . . . large four, five and six cubic yard containers for outside waste storage . . . all are handled by the versatile new DEMPSTER-DUMPMASTER, the self-loading packer system that slashes your waste removal costs by more than two-thirds.

You can own this low-investment system, or contract with a Dumpmaster-equipped Private Hauler to place containers in your plant and empty them for a reasonable fee—his name on request.

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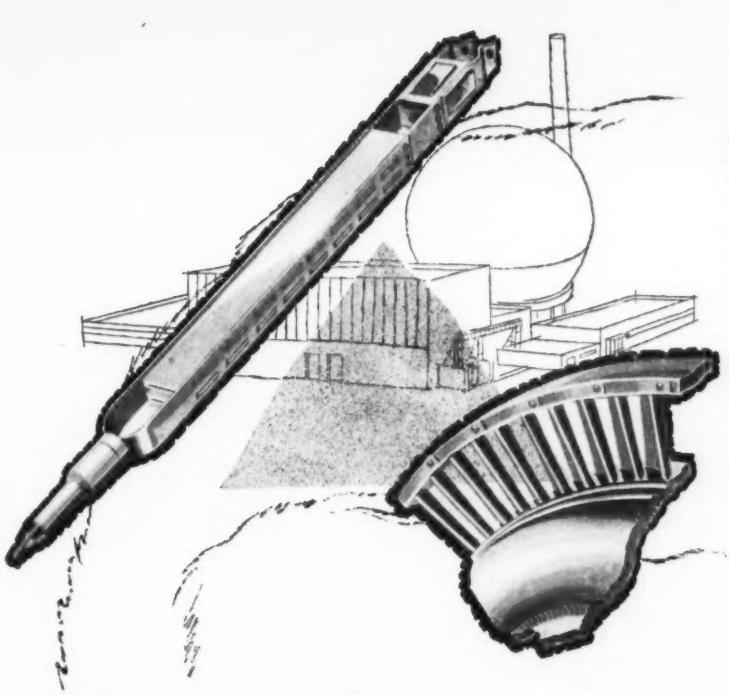
DEMPSTER DUMPSTER® SYSTEMS

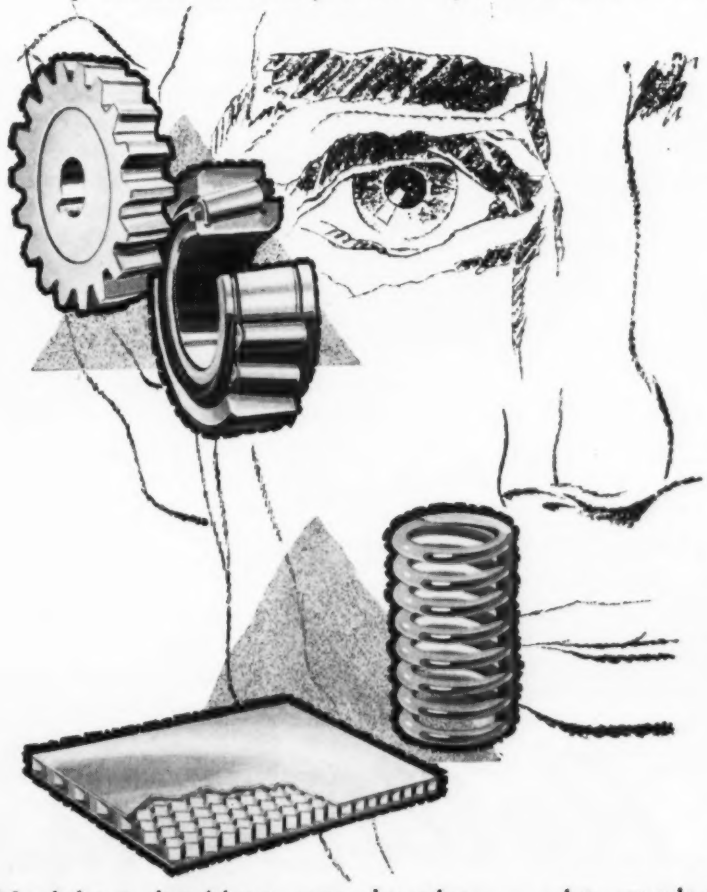


Today's metallurgical engineers and scientists are constantly meeting the challenge of sweeping technological advances. Electronic brains that solve "impossible" problems . . . jets and space craft which open brand-new horizons . . . reactors that produce fantastic amounts of nuclear energy. Advances such as these *demand* better metals . . . metals free of inclusions, with better electrical conductivity, increased hot strength, extended creep resistance and fatigue limits. In turn, better refractories are a "must" in order to precisely control purity and composition during the development of these metals.

Metal processors have long relied on the wide range of Norton Refractory products to precisely meet their re-

Dynamic Achievements With Purer Metals

..reflect the positive protection of Norton Refractories



quirements. High purity (99.5%) ALUNDUM* aluminum oxide, outstandingly stable to both oxidizing and reducing atmospheres . . . dense, fused, stabilized Zirconia for operations requiring an inert refractory for extremely high temperatures . . . nonwetting, nitride-bonded CRYSTOLON* silicon carbide...low boron MAGNORITE* magnesium oxide, ideal for vacuum melting. In addition, the Norton Man is constantly helping in process and product development. Backed by Norton Company's extensive engineering facilities, he can offer time and money-saving advice on all refractory problems.

Meet *your* processing requirements more efficiently and economically with Norton Products and Engineering. For complete details write NORTON COMPANY, Refractories Division, 205 New Bond Street, Worcester 6, Mass.

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LESS GRINDING...
LONGER LIFE

Now, Midvale-Heppenstall offers the finest precision ground rolls made from consumable electrode, vacuum arc melted Midvac Steels with super uniformity of fine grain structure, maximum freedom of defects and non-metallic inclusions. The results are rolls with a Micro-Lustre finish that assures rolling free of surface imperfections . . . can be ground as much as 50% quicker . . . give longer trouble-free service between grinds.

That is why Midvac Rolls are being used throughout the nation for rolling stainless steel, aluminum, foil, brass and precious metals. Midvac Micro-Lustre Rolls improve the finish of your products and save grinding time. Midvale-Heppenstall also makes forged rolls of any size, for any purpose required in the rolling of steel, aluminum, copper, brass, and other metals . . . as well as paper, plastics and rubber.

MidVac Rolls

MIDVALE-HEPPENSTALL CO., NICETOWN, PHILADELPHIA 40, PA.

Subsidiary of HEPPENSTALL COMPANY, Pittsburgh, Pa.

MH

FREE LITERATURE

Continued

These publications describe money-saving equipment and services . . . they are free with no obligation . . . just circle the number and mail the postcard.

Gun Drill Manual

A 16-page manual contains much helpful information on all phases of gun drilling, shows how this technique can be used for critical jobs, and reports that it has become an essential technique for hundreds of firms. Cost savings result from elimination of secondary operations. A line of gun drills is specified. (The Cleveland Twist Drill Co.)

For free copy circle No. 21 on postcard

Magnetic Brakes

A bulletin explains the construction features of a line of dc magnetic brakes, available in six sizes to cover the complete range of 600-series motors. Selection charts are included for matching brakes to specific motors. (The Electric Controller & Mfg. Co., Div. of Square D Co.)

For free copy circle No. 22 on postcard

Small Computer Uses

A brochure describes problems that led to one company's acquisition of a small digital computer, the uses to which their laboratory put it, and benefits derived. (Royal McBee Corp.)

For free copy circle No. 23 on postcard

High-Temp Magnesium

"Shop Guide for Elevated-Temperature Magnesium Alloys," a 28-page booklet, describes recommended practices for working magnesium alloys of the thorium and rare-earth-metal families. Covered are machining (including chemical milling), forming, joining, and assembly protection and finishing. (Magnesium Dept., The Dow Chemical Co.)

For free copy circle No. 24 on postcard

Inclinable Presses

A specification sheet gives data on an entire line of open back inclinable presses. Maximum capacity is 45 tons. (Perkins Machine Co.)

For free copy circle No. 25 on postcard

Welding Small Pipe

A booklet contains two technical articles on welding of small pipe. One article describes the welding processes. The other covers principles of welding and brazing design. (Air Reduction Co., Inc.)

For free copy circle No. 26 on postcard

Barrel Finishers

A line of precision barrel-finishing equipment and accessories is listed in a four-page product bulletin. (Speed-D-Burr Corp.)

For free copy circle No. 27 on postcard

Selector Switches

A data sheet describes a series of miniature multiple-gang rotary selector switch assemblies featuring a "cock - and - fire" mechanism and non-tease circuitry. For use on computers where space is at a premium, they can be adjusted in sequences to fit customer requirements. (MICRO SWITCH, a Div. of Minneapolis-Honeywell Regulator Co.)

For free copy circle No. 28 on postcard

Marking Guide

A selector chart to marking every type of industrial material shows the proper type of marker (crayon, chalk, etc.) to use on each, depending on conditions such as temperature and surface. A six-page catalog illustrating the company's full line of industrial markers is included. (Joseph Dixon Crucible Co.)

For free copy circle No. 29 on postcard

Columbium Uses

Use of ferrocolumbium and ferrotantalum-columbium in alloying steels is discussed in a four-page

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FREE LITERATURE

folder. Expected recoveries, analysis, and alloy sizes are included. (Union Carbide Metals Co.)

For free copy circle No. 30 on postcard

Billet and Slab Casting

The factors influencing quality in continuous casting of aluminum alloys are discussed in an eight-page bulletin. Both billet and slab casting techniques are described. Features of a line of continuous casting machines are presented. (Lobeck Casting Processes, Inc., affiliate of Loma Machine Mfg. Co., Inc.)

For free copy circle No. 31 on postcard

Vane Pumps

Sizes, construction and operation of a series of vane pumps are detailed in a two-page bulletin. "Floating cartridge" construction is featured. (Denison Engineering Div., American Brake Shoe Co.)

For free copy circle No. 32 on postcard

Tanks

Specification data are presented in a 16-page brochure on bulk storage tanks, pressure vessels, boiler installation accessories, and sprinkler tanks. (Acme Welding Div., The United Tool & Die Co.)

For free copy circle No. 33 on postcard

Precision Finishing

A 30-page catalog outlines in detail the various types of finishing and abrading processes such as grinding, deburring, descaling, and polishing, and presents a line of barrel-finishing equipment and supplies therefor. A vibrating barrel finisher is included. (Roto-Finish Co.)

For free copy circle No. 34 on postcard

Machine-Tool Facility

"Report from Cincinnati Milling." Vol. 16, No. 2, discusses aspects of machine-tool planning and design, and covers the company's current research-and-development efforts and some of the products thereof. (The Cincinnati Milling Machine Co.)

For free copy circle No. 35 on postcard

Packaging Tubing

A brief report shows how one company uses chipboard cartons and a semi-automatic steel strapping machine to bundle packages of copper tubing, with a great resulting increase in production. (Acme Steel Co.)

For free copy circle No. 36 on postcard

Cams and Shafts

"Meehanite Cams, Camshafts, and Crankshafts" is a 12-page booklet devoted to application problems solved by Meehanite products. (Meehanite Metals Corp.)

For free copy circle No. 37 on postcard

Aluminum Welding

Weldability of aluminum and a discussion of two processes, the gas-shielded metal-arc and the tungsten-inert-gas processes, are covered in a 120-page book, as well as equipment and supplies for these two processes. (Air Reduction Co., Inc.)

For free copy circle No. 38 on postcard

Atom Quality Control

An installation of x-ray and gamma-ray testing and inspection equipment is described in a brochure. (R-P&C Valve Div., American Chain & Cable Co., Inc.)

For free copy circle No. 39 on postcard

Actuator Screws

Actuator screw and nut assemblies of many sizes and types are described and specified in a bulletin. Contract threading and machining services are offered by the same company. (Jerpbak-Bayless Co.)

For free copy circle No. 40 on postcard

Swivel Vise

A hardened and ground swivel vise is described in a bulletin. (J & S Tool Co., Inc.)

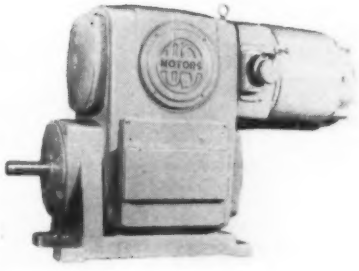
For free copy circle No. 41 on postcard

New Materials and Components

Variable Speed Transmission, Integral Motor

Two new models of variable speed transmission with integral motor are for use for ratings between 30 and 60 hp. One is a single belt drive rated to 40 hp with up to 6:1 speed variations. The other, capable of 60 hp, has dual belts and up to 6:1 speed variations. Both models feature sturdy sub-base construction to permit upright or horizontal mounting and use in confined situations. A variety of remote controls are available. A gear reducer can be mounted for reduced-speed, high-torque applications. (U. S. Electrical Motors, Inc.)

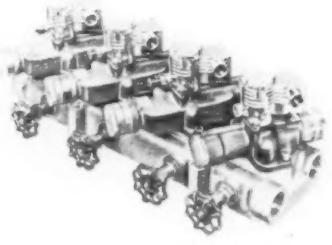
For more data circle No. 42 on postcard, p. 113



Controls Work Cylinders, Clutch, Brake

A four-station manifold is designed for control of work cylinders and clutch or brake on high-speed presses and similar machines. With integral manual shutoff valves at each station, it will accommodate four Speed King control valves; three four-way ¾-in. NPT, single or double solenoid, and one ¾-in. NPT single solenoid. Manifold mounting simplifies piping and cuts maintenance and downtime. Manual shutoff valves permit servicing without shutting off main air supply. (Valvair Corp.)

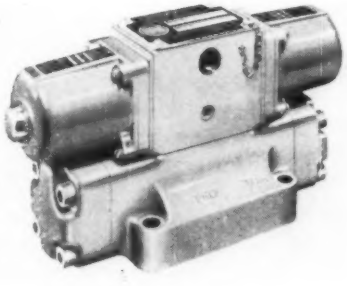
For more data circle No. 43 on postcard, p. 113



Four-Way Valve Runs Quiet, Has Long Life

A ¾-in. four-way valve, 3000 psi, 20 gpm, for pilot-operated, soleniod - controlled applications, features oil-immersed solenoids and is completely interchangeable with industry standards. Use on high-speed, fast-cycling production machines has shown a life 20 to 30 times that of valves with air-gap solenoids. Temperatures are low, and solenoids operate quieter and with less shock. Solenoids are available for all voltage needs. (Hydraulic Press Mfg. Co., A Div. of Koehring Co.)

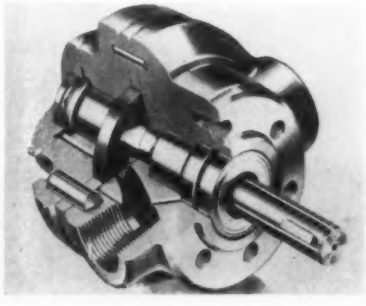
For more data circle No. 44 on postcard, p. 113



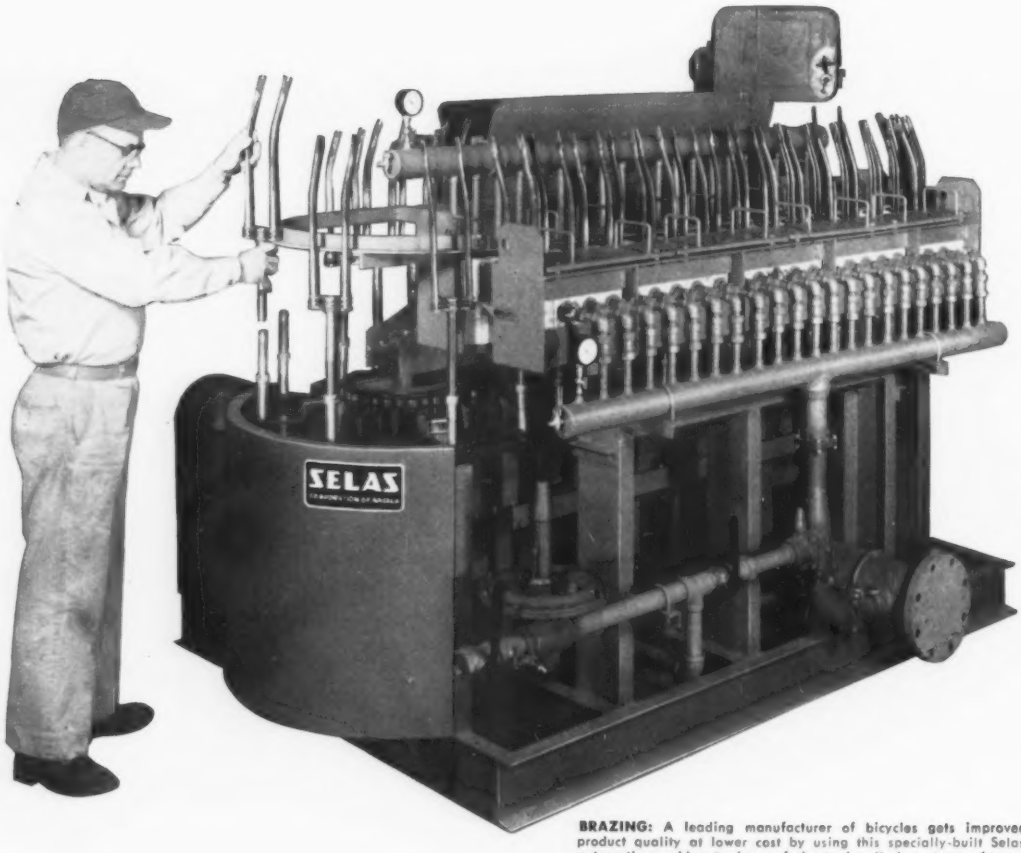
Pumps for Fire-Resistant Fluids

A new line of pumps is announced, for use with fire-resistant fluids. Designed for use where fire hazards make the use of hydraulic oils dangerous, they have been successfully used with water-soluble-oil emulsions, glycol-water mixtures, and other fluids. Currently available in seven sizes from 3 to 40 gpm as single pumps and any combination of 3, 5, 8, or 12 gpm as double pumps, they are dimensionally interchangeable with most regular oil-hydraulic units of similar capacities. (Double A Products Co., subsidiary of Brown & Sharpe Mfg. Co.)

For more data circle No. 45 on postcard, p. 113



IMPROVE YOUR PRODUCT... LOWER YOUR COSTS
...with Selas Automatic Heat Processing



BRAZING: A leading manufacturer of bicycles gets improved product quality at lower cost by using this specially-built Selas automatic machine to braze forks to handle-bar stems. Assemblies, held in fixtures on 5 in. centers, are conveyed through Duradiant®-fired heating zone in a continuous operation. Following heating to 1650°F (the melting point of the brazing alloy), brazed assemblies are air-cooled to solidify the alloy, then water-quenched and cooled at discharge end of the compact (6 x 9½ ft) straight-through machine. Production rate is 300 per hr and fixtures may be adjusted quickly to accommodate various fork and handle-bar stem sizes.

Selas automatic machines are extensively used for production heat processing operations, including annealing, heat treating, brazing and soldering, forging and localized hardening.

The installations shown on these pages demonstrate how Selas automatic heat processing equipment can:

- increase production speed
- save fuel and operating costs
- minimize in-process inventory
- reduce manpower requirements
- save valuable floor space
- improve product quality

Individually designed and custom-built to meet your specific production requirements and job specifications, Selas automatic machines employ time-proven standardized engineering features for longtime operating dependability and minimum initial cost. In addition, you avoid problems usually associated with divided responsibility since Selas starts-up and services every machine it designs and builds.

A Selas automatic machine can prove beneficial in your plant. At your convenience . . without cost or obligation to you . . a Selas field engineer would welcome the opportunity to survey your needs.

For this personal service—or for literature on any of the heating operations shown on these pages—address Dept. 16, Selas Corporation of America, Dresher, Pa.

Duradiant and Gradiation are registered trade names of Selas Corporation of America.

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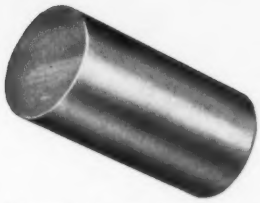
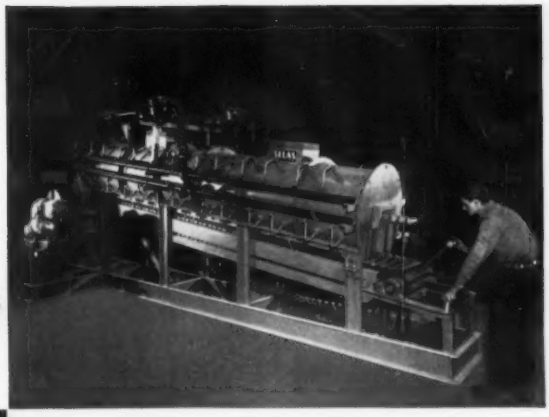
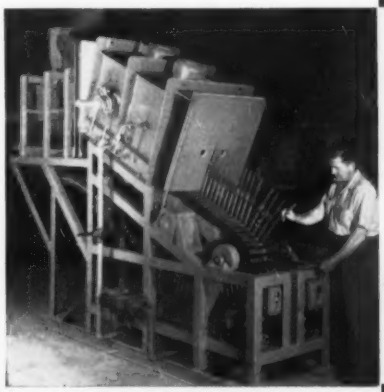


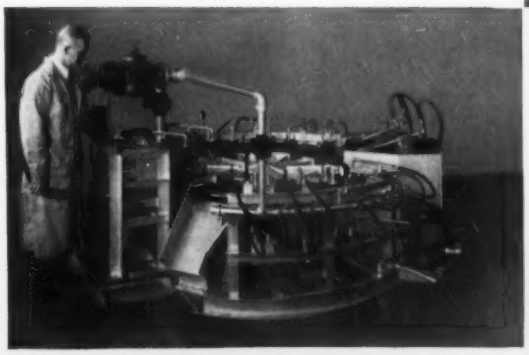
HEATING FOR FORGING: In order to create a more readily saleable product, characterized by fine grain size and better physical properties, a forging shop heats brass slugs with this Selas automatic Gradiation® equipment. Slugs vary in size from ⅞ to 2 in. diam, 2½ to 8 in. in length. Maximum weight per slug is 4 lb and machine heats at rate of approximately 2,000 lb per hr to uniform temperature of 1390°F. Piece production rate for smallest slugs is 800 per hr. Precise positioning on work fixture, typical Selas fast heating and split-second removal of heated slugs from chamber contribute to production of higher-quality forgings.





HEAT TREATING: Designed and built by Selas, this automatic heat processing machine eliminates costly, hazardous lead baths conventionally used to harden stainless steel knife blades. Compact machine (9 x 3½ ft floor space) requires only one operator for entire process. Hand-loaded, blades are quickly brought to 1950°F without scale formation, are uniformly hardened to Rc 42/44 while handle retains full softness to permit design embossing. Angle-mounting permits operator to work at shop floor level; collecting-baskets conform to 4 ft level of existing materials handling system. In addition to saving plant space, reducing manpower requirements and improving safety conditions, Selas machine eliminates two operations: (1) an oil quench and (2) removal of scale and excess lead.

ANNEALING: Unique Selas gas-fired machine anneals brass door knob blanks—automatically in the production line—as part of a completely integrated manufacturing process. Selas Superheat burners fire a narrow jet of high velocity, high temperature gases at a 1⅜ in. band on sidewall of blank. Annealing, cooling and discharge, accomplished in 9 sec, are geared to production line output of 60 finished knobs each minute. Fast Selas heating by non-oxidizing combustion gases achieves a cleaner, brighter end-product . . eliminates need for muffles or prepared atmosphere.



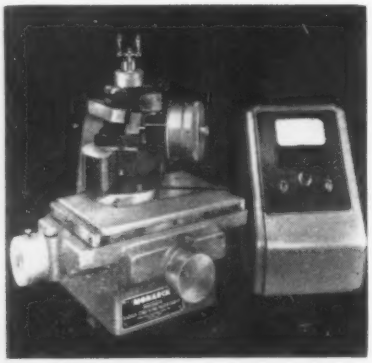
SELECTIVE HARDENING: The end portions of brake shoe webs must be hardened to create a more durable product. Selas automatic machine employs an indexing conveyor which brings just the two ends of webs under Duradiant burners. Designed for automatic loading, the rotary machine heats, quenches, tempers and mechanically unloads the selectively-hardened workpieces. Service life of webs has been materially extended, costs have been reduced by precise heating of selected areas. Burners may be adjusted to accommodate a variety of brake shoe web sizes.

SELAS
CORPORATION OF AMERICA
DRESHER, PENNSYLVANIA

Heat and Fluid Processing Engineers

DEVELOPMENT • DESIGN • CONSTRUCTION

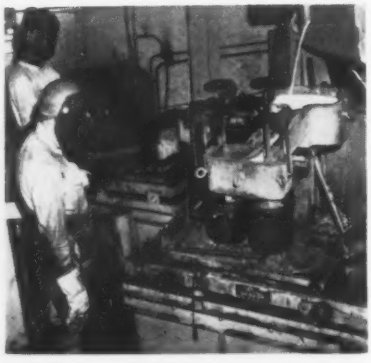
New Equipment and Machinery



Tool Radius Checker Improves Contouring

Accuracy of the radius of the cutting tool edge is necessary for quality contouring of hemispherical workpieces. A precision radius checker permits accurate measurement of these radii. The equipment is used with an electronic checking device. A precision ball of corresponding radius is used as a standard, and a measuring head is set to follow the ball around its circumference with the checking device steady on zero. Then the ball is replaced by the tool, and the true nose radius is determined. If it deviates from standard, the amount of error is precisely determined. Checking balls are provided with diam of 1/16, ⅛, ¼, ⅜, and ½ in. (The Monarch Machine Tool Co.)

For more data circle No. 46 on postcard, p. 113



Continuous Casting Speeds Copper Production

A semi-continuous casting machine speeds production of copper billets and improves metal quality. Fed with liquid metal from an electric-arc furnace, the tandem installation pictured provides uninterrupted casting of 7-in.-diam x 12-ft billets. A circular saw cuts these "logs" to any desired extrusion billet length. Molten copper comes from the furnace to the double mold of the first machine, and is "underpoured" to eliminate porosity and inclusions. When casting length reaches 12 ft, metal flow is switched to the other machine, and casting continues in this fashion. Costs are reduced, and quality and size versatility result. (Lobeck Casting Processes, Inc.)

For more data circle No. 47 on postcard, p. 113

Collet Chuck "Stubs" Drills, Reduces Wear

Lower fixture costs, longer drill life, and faster tool changes are possible on single- or multiple-spindle drilling machines with a drill collet chuck. Eliminating guide bushings and torsional windup in drills by this "stubbing" brings great tool life increases. Wear from chatter and rubbing against guide bushings is eliminated. Greater stiffness permits accurate drilling without costly fixtures. The collet grips the drill on shank or margins for locating and driving, and a backup adjusting screw controls depth setting. The chuck fits any spindle taking an adapter from ⅞- to 1⅞-in. shank size. Models are available for drills from ⅛ to 1¼ in. A ball-locking collar permits quick tool changes. (Scully-Jones and Co.)

For more data circle No. 48 on postcard, p. 113

THE U.S. TREASURY SALUTES THE PEOPLE IN THE STEEL INDUSTRY

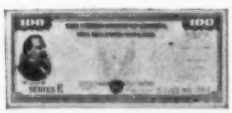
—who buy Savings Bonds and strengthen America's Peace Power

Men and women who earn their living in the steel industry can take great pride in knowing that their crafts and skills contribute, through raw material supplies, to nearly every other great industry in the United States. They can also be proud of the help thousands upon thousands of them are giving to America's Peace Power through the purchase of U.S. Savings Bonds.

Through regular purchase of Shares in America, these thrift-conscious people are reinforcing their own security after retirement, and establishing current reserves for such worthwhile family projects as new homes, education and travel.

If your company has not put in a Payroll Savings Plan thus far, you can start immediately. Just telephone your State Savings Bonds Director and accept the help he wants to give you. Or write to Savings Bonds Division, U.S. Treasury Department, Washington, D.C.

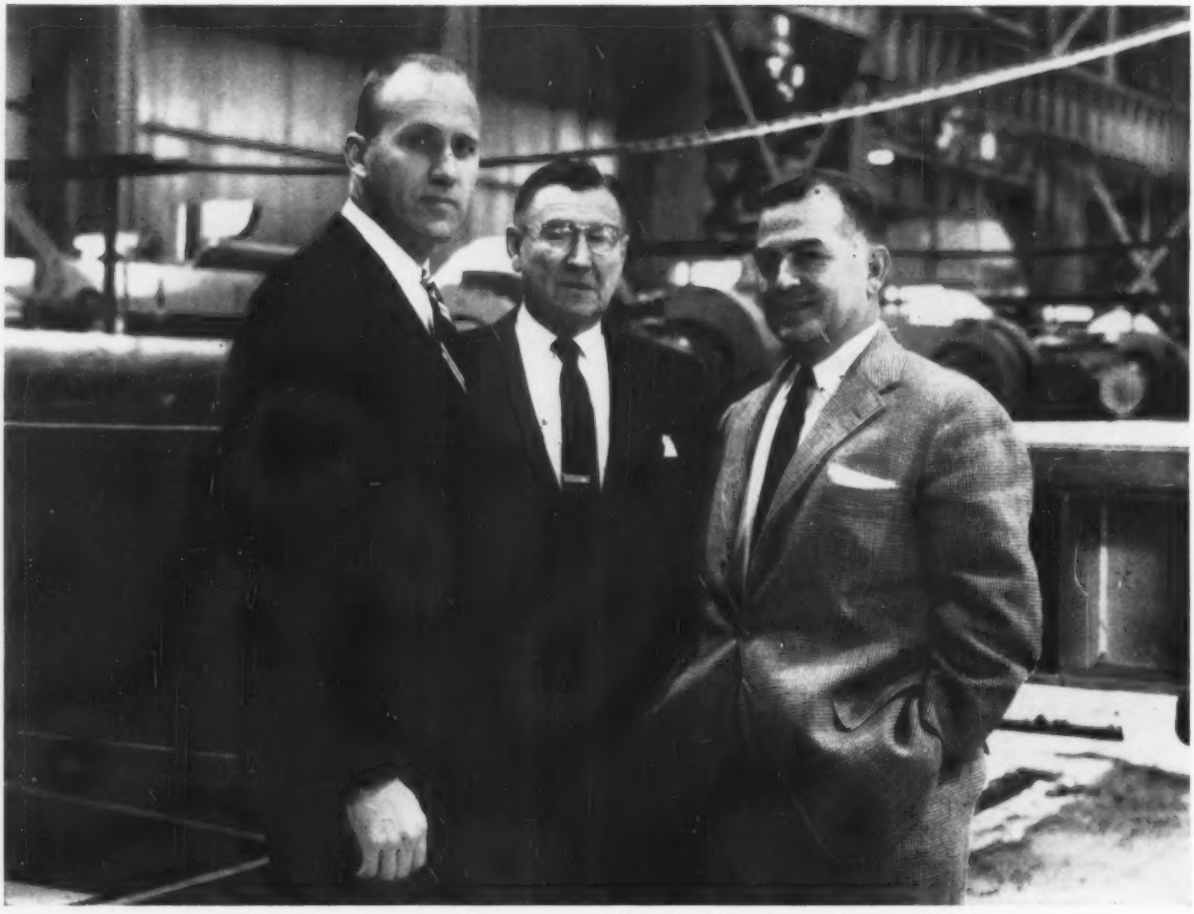
J. K. Thomson is shown here at his work in one of the great steel mills of this country. Like thousands of his fellow craftsmen, Mr. Thomson is making regular use of his company Payroll Savings Plan to contribute to the Peace Power of his country.



The IRON AGE

THE U. S. GOVERNMENT DOES NOT PAY FOR THIS ADVERTISEMENT. THE TREASURY DEPARTMENT THANKS, FOR THEIR PATRIOTISM, THE ADVERTISING COUNCIL AND THE DONOR ABOVE.

Now the nation's third largest steel plate producer



The men who guide Lukens purchasing activities are, left to right, Edmund Pfeifer, Director of Purchases; E. Clair Book, Purchasing Consultant; and Albert W. Gudal, Purchasing Agent.

LUKENS SALUTES ITS PURCHASING MEN

. . . for their important contribution to the company's growth. Purchasing is one of modern management's most valued skills. Lukens knows this well, for it has aided our progress consistently in recent years—especially during our "Phase A" expansion program which raised us to third position among steel plate producers. Lukens' experienced purchasing team worked closely with contractors to achieve on-time completion of this project, and is now geared to more critical procurement demands than ever.

Our customers can now look forward to a growing supply of carbon and alloy steel plate, plate shapes, heads, weldments . . . Lukens "T-1," "Nine Nickel" and clad steels. In addition to greater capacity, the new facilities will provide even better steel plate quality.

Careful, competent purchasing was essential to the realization of "Phase A" objectives: *new capacity and quality levels to meet the growing demands of our plate fabricating customers.* Lukens Steel Company, Coatesville, Pa.

NEW CAPACITY ~ NEW QUALITY

LUKENS ®

SERVING INDUSTRY WITH A WIDE RANGE OF SPECIALTY CARBON, ALLOY, ARMOR AND CLAD STEEL PLATE • HEADS • PLATE SHAPES • PLATE-MATE WELDING ELECTRODES AND WIRE

The Iron Age Summary

Labor Peace and Market Outlook

Assuming a peaceful settlement of steel labor dispute, here's the outlook for steel market.

Steel service centers enjoy good business as strike deadline nears.

▪ Assuming there is no steel strike, the market outlook for the various steel products is about like this:

Plates, galvanized sheets, and railroad products seem certain to remain strong. On plates, the mills are hopelessly behind delivery schedules. They have heavy July commitments and steel is said to be earmarked for specific jobs.

Freight Car Backlogs—Backlogs of freight car builders are growing steadily, and the belated start of current programs has offered little chance to build inventories.

Galvanized sheets were strong before inventory building started, and there appears to be no end to demand. Mills are restricting third quarter orders.

Oil Country Letdown—Tubular products, with the exception of large linepipe, appear headed for a sharp summer letdown. One mill estimates half of normal third quarter oil country seamless has already been shipped. Standard structurals are still readily available for July delivery.

Sheets, wide-flange beams, and bars are question marks. Cold-rolled sheets are sold out for July, and August orders are coming in at a good rate. However, the big sheet users are known to be holding large stocks. Appliance and auto plants will have two months' supply at the end of June.

Auto Buildup—The extent of the auto buildup is shown by these figures: One year ago, a major auto plant was carrying steel for 16 days of operations at a low level of output. Today the same plant has 60 days' supply on the basis of a much higher production rate.

However, one mill points out that 60 days is not too excessive for a period when steel lead times are extending to 45 days or better.

Service Center Business—As the June 30 strike deadline nears, the business of steel service centers (warehouses) held at a strong level. A lot of orders of a size that usually go to a mill are being rushed into warehouses.

Service center operators are beginning to worry about holes in their inventory. In the last week some of them have been telling customers of low stocks of structural, wire, sheet, plate, and in a few instances some sizes of hot-rolled bar.

Plate a Problem—One buyer was told by a service center that it was even anticipating trouble supplying some sizes of standard structural. The big problem is going to be plate, where several warehouses have already been cleaned out.

In some areas, mills talk of slow down on their sheet rolling mills. But this is not a universal complaint, and it is doubtful that this will become widespread despite the tense feeling that now exists.

Steel Output, Operating Rates

Production (Net tons, 000 omitted)	This Week	Last Week	Month Ago	Year Ago
	2,632	2,620	2,674	1,685
Ingot Index (1947-1949=100)	163.8	163.1	166.6	104.9
Operating Rates				
Chicago	94.0	94.0*	94.0	69.0
Pittsburgh	93.0	97.0*	94.5	61.0
Philadelphia	100.0	99.0	95.0	65.0
Valley	85.0	84.0*	86.5	43.5
West	90.5	92.5*	95.0	70.0
Cleveland	96.0	94.0*	92.0	50.0
Detroit	93.0	96.0	98.0	44.0
Buffalo	104.0	104.0	107.0	66.0
South Ohio River	96.0	92.0*	93.0	68.0
South	92.0	92.0	95.0	63.0
Upper Ohio River	92.0	90.0*	91.0	71.0
St. Louis	89.0	72.0*	97.0	93.0
Aggregate	93.0	92.5	94.5	62.4

*Revised

Prices At a Glance

(Cents per lb unless otherwise noted)	This Week	Week Ago	Month Ago	Year Ago
Composite price				
Finished Steel base	6.196	6.196	6.196	5.967
Pig Iron (gross ton)	$66.41	$66.41	$66.41	$66.49
Scrap No. 1 hvy (Gross ton)	$38.17	$38.17	$35.83	$35.17
No. 2 bundles	$25.50	$25.33	$24.17	$25.83
Nonferrous				
Aluminum ingot	26.80	26.80	26.80	26.10
Copper, electrolytic	31.50	31.50	31.50	25.75
Lead, St. Louis	11.80	11.80	11.80	11.30
Magnesium	36.00	36.00	36.00	36.00
Nickel, electrolytic	74.00	74.00	74.00	74.00
Tin, Straits, N. Y.	103.50	104.00	103.625	94.625
Zinc, E. St. Louis	11.00	11.00	11.00	10.00

Motor Price Increases Likely

Price hikes for fractional horsepower and large motors are a definite prospect.

But sales competition may hold off any price boosts for integral hp units.

▪ Motor makers report better business but still no boom.

Sales of ac motors in the integral horsepower range (1.200 hp) are running about $14 million a month. This compares with levels of $11 million a month in 1958 and $17 million a month in 1957.

Price Problems—The gain indicated by these figures has not been enough to stiffen prices or build backlogs. Prices of ac motors were cut 20 pct about a year ago. There have been no general changes since then but informal price cutting continues.

Price competition is so bad in the integral horsepower range that one builder does not see how anyone can be making money. Moreover, the pinch could get tighter. Labor costs will go up in the next few months. There is no sign sales will strengthen enough to make price increases practical. Prices of dc motors went up 5 pct about two months ago.

Delivery Outlook—Deliveries of ac motors are running six weeks or more. Dc motors are available in 10 to 12 weeks. In the smaller sizes (under 50 hp), producers are maintaining large stocks of motors.

Sales of fractional horsepower motors are up about 10 pct over last year, largely on the strength of the appliance revival. The sales gain has brought a firming of prices and a slight extension of deliveries.

Price Hike?—One manufacturer feels increased labor costs will force a price increase in the next few months. There has not been a general increase since 1957. Prices drifted downward last year, with the cumulative reduction estimated at 10 pct.

With plants already highly automated and with cost reduction programs already operating in high gear, producers of appliance motors feel they've squeezed all the fat out of manufacturing processes. The prospect of higher wages and higher material costs makes price increases inevitable.

Fractional Prospects—The sales gain in fractional motors has still not taxed capacity of major producers. Deliveries are running four to five weeks—or about one week longer than a year ago. There is enough idle capacity to keep buyers in a commanding position. Motor users are operating with low inventories and relying on tight delivery schedules.

Heavy Motor Sales — Demand for large motors (over 300 hp) has picked up in the last 30 days. Both steel mills and power plants have stepped up orders. In the case of power plants, orders placed now will not go into production schedule until next year. Motor builders are hoping the power pickup will be more than just a flurry but the outlook is still uncertain.

Prices of heavy motors have firmed up after spot reductions earlier in the year. Builders are uncertain as to the price outlook but they point out that wages and probably materials will go up in the next few months.

DECISION BY MACHINE: At Westinghouse Electric Corp. optimum design of motors is accomplished by digital computers. Cards containing design problems are fed into computer. Depending on nature and complexity of problems the answers are ready in a few minutes to an hour.

zero plus

. . . and Carlson special stainless steels withstand the extremes of another launching

When this missile "lifts off," Carlson special stainless steel plates help launch it into space. These plates are the high strength, precipitation-hardening grades. And there are sound reasons why these grades are used.

First, with Armco 17-4PH, 17-7PH and PH15-7 Mo* it is easier to attain the high physical properties and resistance to elevated temperatures required in space flight engineering. Simplified low temperature heat treatment will develop a Rockwell hardness of C40 to C50. Tensile strengths, so vital in missile components, range from 180,000 to 220,000 psi in plates.

Second, only Carlson produces these Armco grades in the heavier plate thicknesses. For applications where high strength at high temperatures and ease of fabrication are important, get plates in these grades from Carlson. We will be glad to work with you on specific applications.

*17-4PH, 17-7PH and PH15-7 Mo are trade marks of Armco Steel Corporation

G. O. CARLSON Inc.

Stainless Steels Exclusively

120 Marshalton Road
THORNDALE, PENNSYLVANIA
District Sales Offices in Principal Cities

PLATES • PLATE PRODUCTS • HEADS • RINGS • CIRCLES
FLANGES • FORGINGS • BARS and SHEETS (No. 1 Finish)

Photo of Atlas missile courtesy
CONVAIR ASTRONAUTICS,
A Division of General Dynamics Corp.

Mills Push Buyers For August Orders

With July tonnages spoken for, mills are spending time looking for August business.

They feel customers will benefit by getting orders on the books now.

■ Mills are urging steel users to get August orders in early.

With July tonnages mostly sold out, the producers are concentrating on August business. But they feel customers, too, will benefit by specifying late summer needs now.

"Look at it this way," says an East Coast steel sales manager. "Some buyers got left in the lurch when they tried to order June tonnage too late. These customers will have to settle for July shipment—provided we're not strike-bound.

"That's why we're asking them to place August orders soon. By putting in orders now they'll be assured delivery as soon as possible this summer. In August, if there's no strike. Or as soon as things settle down after any work interruption."

This mill man—and other steel sales officials—also point out present mill carryovers will extend summer steel deliveries. July tonnages will be delayed by June backlogs. And August tonnages probably will wait until July arrearages are cleared up.

Sheet and Strip — Most sheet mills are sold out for July. August orders are coming in at a fairly good rate. Producers will go out of June with sheet carryovers. **Eastern** mills say cold-rolled sheet backlogs average about three weeks. Carryovers on hot-rolled sheet are not quite so large.

However, at **Chicago** mills carryovers on hot-rolled and cold-rolled sheet average six weeks. Some producers have backlogs exceeding six weeks. Service centers there report some supplies of sheet are getting low.

Galvanized sheets remain in tight supply with many mills restricting third quarter orders.

Plate—July tonnages are booked out at most mills with the producers behind on June delivery schedules. These carryovers are not extensive along the **East Coast.** One large supplier says backlogs average only a week or two. Situation is much more critical farther west. Plate bookings at **Chicago** plus present carryovers will take up most third quarter rolling time.

Structurals — **Eastern** and **Pittsburgh** mills still have standard structurals available for July delivery. July orders are not "outstanding" according to one mill sales official.

In the **Midwest,** however, some mills will go out of the second quarter with four to six weeks carryover. Fabricators there are concerned about steel supplies. Some are switching to service centers to get structurals for current jobs. By July 1 some expect to have only half their normal inventory in stock.

West Coast mills have stepped up their production of standard structurals. As a result they have been able to cut estimated delivery time by two weeks.

Wire Products — Third quarter bookings are coming in at a strong rate. Some customer inventories of manufacturers wire in the **Midwest** are almost cleaned out. As a result the users are asking mills to increase June shipments—if possible. Despite this pressure, wire producers are making plans for their normal two-week July vacation shutdown.

Service Centers—Distributors are being prodded in the **Midwest** to fill mill-sized orders for June delivery. Warehouses there are reporting some shortages in their stocks of structurals, wire, sheet, hot-rolled bar, and plate. There are even cases where distributors are having trouble filling orders for standard structurals. Plate supplies seem especially critical. Some **Chicago** warehouses are very low on plate stocks.

Delivery Promises at a Glance

	East	Pittsburgh	Cleveland	Detroit	Chicago	West Coast
CR Carbon Sheet	6–8 wks	4–8 wks	Quota	Quota	7–10 wks	Quota
HR Carbon Sheet	4–8 wks	4–8 wks	Quota	Quota	8–10 wks	14 wks
CR Carbon Strip	4–8 wks	4–8 wks	Quota	Quota	8–10 wks	Quota
HR Carbon Strip	4–8 wks	4–8 wks	Quota	Quota	8–10 wks	10 wks
HR Carbon Bars	5 wks	3–7 wks	Quota	Quota	8–12 wks	8 wks
CF Carbon Bars	4–8 wks	4–8 wks	6–8 wks	Quota	8–12 wks	5 wks
Heavy Plate	4–8 wks	7–10 wks			12–16 wks	Quota
Light Plate	7–10 wks	7–10 wks	Quota		10–14 wks	Quota
Merchant Wire	July	Stock	Stock		4–8 wks	4 wks
Oil Country Goods	July	2–7 wks	4–8 wks		12–16 wks	
Linepipe	July	8–10 wks	4–8 wks		12–16 wks	8 wks
Buttweld Pipe	July	Stock	4–6 wks	Quota	8–10 wks	8 wks
Std. Structurals	3–5 wks	3–5 wks		Quota	8–10 wks	10 wks
CR Stainless Sheet	4–8 wks	4–8 wks	6–8 wks	Quota		
CR Stainless Strip	4–8 wks	4–8 wks	6–8 wks	Quota		

COMPARISON OF PRICES

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price advances over previous week are printed in **Heavy Type**; declines appear in *Italics*.

	June 23 1959	June 16 1959	May 26 1959	June 24 1958
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	4.925¢
Cold-rolled sheets	6.275	6.275	6.275	6.05
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.60
Hot-rolled strip	5.10	5.10	5.10	4.925
Cold-rolled strip	7.425	7.425	7.425	7.17
Plate	5.30	5.30	5.30	5.12
Plates, wrought iron	13.55	13.55	13.55	13.15
Stainl's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tinplate (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.30
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.00
Special coated mfg. ternes	9.90	9.90	9.90	9.55
Bars and Shapes: (per pound)				
Merchant bar	5.675¢	5.675¢	5.675¢	5.425¢
Cold finished bar	7.65	7.65	7.65	7.30
Alloy bars	6.725	6.725	6.725	6.475
Structural shapes	5.50	5.50	5.50	5.275
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.45
Wire: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	7.65¢
Rails: (per 100 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.525
Light rails	6.725	6.725	6.725	6.50
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$77.50
Slabs, rerolling	80.00	80.00	80.00	77.50
Forging billets	99.50	99.50	99.50	96.00
Alloys blooms, billets, slabs	119.00	119.00	119.00	114.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.15¢
Skelp	5.05	5.05	5.05	4.875
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	5.967¢

(Effective June 23, 1959)

	June 23 1959	June 16 1959	May 26 1959	June 24 1958
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.57	$70.57	$70.57	$70.97
Foundry, Southern Cin'ti	73.87	73.87	73.87	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.07	70.07	70.07	70.47
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb‡	12.25	12.25	12.25	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.41	$66.41	$66.41	$66.49
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$42.50	$42.50	$39.50	$37.50
No. 1 steel, Phila. area	37.50	37.50	35.50	33.50
No. 1 steel, Chicago	34.50	34.50	32.50	34.50
No. 1 bundles, Detroit	35.50	35.50	31.50	31.50
Low phos., Youngstown	42.50	42.50	40.00	37.50
No. 1 mach'y cast, Pittsburgh	**50.50**	49.50	49.50	48.50
No. 1 mach'y cast, Phila.	49.50	49.50	49.50	47.50
No. 1 mach'y cast, Chicago	58.50	58.50	55.50	45.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$38.17	$38.17	$35.83	$35.17
No. 2 bundles	**25.50**	25.33	24.17	25.83
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.50-15.50	$14.50-15.50	$14.50-15.50	$15.38
Foundry coke, prompt	18.50	18.50	18.50	17.50-19
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	31.50	31.50	31.50	25.75
Copper, Lake, Conn.	31.50	31.50	31.50	25.00
Tin, Straits, N. Y.	*103.50*†	104.00	103.625	94.625
Zinc, East St. Louis	11.00	11.00	11.00	10.00
Lead, St. Louis	11.80	11.80	11.80	11.30
Aluminum, virgin ingot	26.80	26.80	26.80	26.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ° Revised.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composites

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Lull Settles Over Scrap Market

As the steel labor talks go down to the wire, scrap movement is slowing down.

But even if there is a strike, the outlook for scrap is good. Prices are strong.

▪ It's a wait-and-see market.

With the steel strike deadline only days away, little scrap is moving to domestic mills. Prices for the most part are unchanged.

But there is an undercurrent of strength in the market. Whether there is or isn't a steel strike, the scrap industry appears confident over the outlook for the immediate future.

If a peaceful labor settlement comes, there is widespread feeling that the mills will resume operations at recent levels and continue buying scrap. If a strike is called, the mill shutdowns will give the scrap trade a chance to rebuild inventories in readiness for a record-breaking steel operating rate, once the strike is settled.

Statement of Policy

The IRON AGE scrap price quotations are not necessarily based on actual sales of all grades quoted. In the absence of a sale of a representative tonnage, quotations are based on appraisal of the market factors involved. This statement of policy does not represent any change in The IRON AGE's method of quoting scrap prices. Readers may wish to file this statement; it will not be reprinted regularly. — The Editors.

With little new business reported, The IRON AGE No. 1 heavy melting Composite Price remains unchanged at $38.17.

Pittsburgh—Prices of most scrap grades are unchanged as shipment cutoffs by most mills have postponed a test of new market strength. Mills have reportedly put out feelers for scrap that would be shipped after any work stoppage. Prices mentioned have ranged up to $45 for a large tonnage of No. 1 open-hearth grades. Brokers show little interest in doing business on this basis.

Chicago—The market continues to hang fire while brokers and buyers await the result of contract negotiations. Smaller mills made new purchases at existing prices. Dealers withheld some plate material for recutting to electric furnace length when brokers refused to boost heavy melting buying prices.

Philadelphia — Brokers raised their buying prices $1 on No. 1 dealer bundles, new busheling, and electric furnace bundles. A sale of heavy breakable cast was made at $43, a $1 increase. Export continues strong. One broker is buying now for July shipment and inquiries are out for August and September cargoes.

New York — New buying, principally export, has boosted steelmaking grades $1 a ton to a top of $30 for No. 1 heavy melting. Other grades are unchanged and dealers and brokers are awaiting the outcome of steel labor talks.

Detroit — Dealer-to-dealer transactions have shown a $1 to $2 decline in the past week over the first of the month. Brokers say there is neither strength nor weakness apparent in the market—just absence of activity.

Cleveland — Market is treading water pending outcome of steel labor pact. Little buying or selling is going on. Dealer shipments are being held up as mills prepare to shut down. Some will be laid down in dealer yards.

St. Louis—A strong undertone prevails in this market, although dealings are extremely quiet. The steel labor negotiations seem to be having little or no effect on the market. Prices are unchanged.

Birmingham — Scrap is moving well at previously established prices. Dealers and brokers are optimistic about continued good movement even if there is a strike.

Cincinnati—Dealers are expecting a sharp pickup after the steel labor picture has cleared. They're prepared to sit out the interim. One mill has extended shipping deadline to June 25.

Buffalo—Scrap activity has come to a standstill here. Dealers have ended shipments to mills and are awaiting outcome of steel labor negotiations. Prices are unchanged.

Boston—The market held steady and quiet for the most part. There was little activity in view of the uncertain steel labor outlook. Machine shop turnings moved up $1.50 to $10-$11.

West Coast—Major mills have stopped taking scrap. Prices remain firm due to exporting. To fill out cargoes, some dealers are reported paying $1 to $2 per ton above quoted prices.

Houston—The market continues quiet, with much uncertainty over the steel labor talks. Exporters are hopeful of new orders. Cast scrap is getting harder to find.

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Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company
USS
United States Steel

SCRAP PRICES *(Effective June 23, 1959)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$42.00 to $43.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	43.00 to 44.00
No. 1 factory bundles	47.00 to 48.00
No. 2 bundles	28.00 to 29.00
No. 1 busheling	42.00 to 43.00
Machine shop turn.	20.00 to 21.00
Shoveling turnings	27.00 to 28.00
Cast iron borings	26.00 to 27.00
Low phos. punch'gs plate	46.00 to 47.00
Heavy turnings	33.00 to 34.00
No. 1 RR hvy. melting	43.00 to 44.00
Scrap rails, random lgth.	51.00 to 52.00
Rails 2 ft and under	56.00 to 57.00
RR specialties	50.00 to 51.00
No. 1 machinery cast.	50.00 to 51.00
Cupola cast.	45.00 to 46.00
Heavy breakable cast.	43.00 to 44.00
Stainless	
18-8 bundles and solids	230.00 to 235.00
18-8 turnings	115.00 to 120.00
430 bundles and solids	130.00 to 135.00
410 turnings	55.00 to 60.00

Chicago

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	32.00 to 33.00
No. 1 dealer bundles	35.00 to 36.00
No. 1 factory bundles	40.00 to 41.00
No. 2 bundles	24.00 to 25.00
No. 1 busheling	34.00 to 35.00
Machine shop turn.	17.00 to 18.00
Mixed bor. and turn.	19.00 to 20.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Low phos. forge crops	49.00 to 50.00
Low phos. punch'gs plate, ½ in. and heavier	46.00 to 47.00
Low phos. 2 ft and under	44.00 to 45.00
No. 1 RR hvy. melting	39.00 to 40.00
Scrap rails, random lgth.	49.00 to 50.00
Rerolling rails	59.00 to 60.00
Rails 2 ft and under	54.00 to 55.00
Angles and splice bars	50.00 to 51.00
RR steel car axles	65.00 to 66.00
RR couplers and knuckles	48.00 to 49.00
No. 1 machinery cast.	58.00 to 59.00
Cupola cast.	51.00 to 52.00
Cast iron wheels	43.00 to 44.00
Malleable	59.00 to 60.00
Stove plate	49.00 to 50.00
Steel car wheels	48.00 to 49.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	110.00 to 115.00
430 bundles and solids	115.00 to 120.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	38.00 to 39.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	38.00 to 39.00
Machine shop turn.	19.00 to 20.00
Mixed bor. short turn.	19.00 to 20.00
Cast iron borings	19.00 to 20.00
Shoveling turnings	23.00 to 24.00
Clean cast. chem. borings	24.00 to 25.00
Low phos. 5 ft and under	39.00 to 40.00
Low phos. 2 ft punch'gs	41.00 to 42.00
Elec. furnace bundles	38.00 to 39.00
Heavy turnings	33.00 to 34.00
RR specialties	43.00 to 44.00
Rails 18 in. and under	59.00 to 60.00
Cupola cast.	40.00 to 41.00
Heavy breakable cast.	42.00 to 43.00
Cast iron car wheels	45.00 to 46.00
Malleable	67.00 to 68.00
No. 1 machinery cast.	49.00 to 50.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.50 to $34.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 dealer bundles	33.50 to 34.50
No. 2 bundles	23.00 to 24.00
Machine shop turn.	17.00 to 18.00
Shoveling turnings	19.00 to 20.00
Cast iron borings	18.00 to 19.00
Low phos. 18 in. and under	43.00 to 44.00
Rails, random length	47.00 to 48.00
Rails, 18 in. and under	55.00 to 56.00
No. 1 cupola cast.	45.00 to 46.00
Hvy. breakable cast.	41.00 to 42.00
Drop broken cast.	51.00 to 52.00

Youngstown

No. 1 hvy. melting	$40.50 to $41.50
No. 2 hvy. melting	28.50 to 29.50
No. 1 dealer bundles	40.50 to 41.50
No. 2 bundles	27.50 to 28.50
Machine shop turn.	19.50 to 20.50
Shoveling turnings	24.50 to 25.50
Low phos. plate	42.00 to 43.00

Cleveland

No. 1 hvy. melting	$37.00 to $38.00
No. 2 hvy. melting	29.00 to 30.00
No. 1 dealer bundles	37.00 to 38.00
No. 1 factory bundles	43.00 to 44.00
No. 2 bundles	25.00 to 26.00
No. 1 busheling	37.00 to 38.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	21.00 to 22.00
Shoveling turnings	21.00 to 22.00
Cast iron borings	21.00 to 22.00
Cut structural & plates, 2 ft & under	45.00 to 46.00
Drop forge flashings	37.00 to 38.00
Low phos. punch'gs plate	38.00 to 39.00
Foundry steel, 2 ft & under	40.00 to 41.00
No. 1 RR hvy. melting	42.00 to 43.00
Rails 2 ft and under	55.00 to 56.00
Rails 18 in. and under	56.00 to 57.00
Steel axle turnings	24.00 to 25.00
Railroad cast.	53.00 to 54.00
No. 1 machinery cast.	51.00 to 52.00
Stove plate	48.00 to 49.00
Malleable	66.00 to 67.00
Stainless	
18-8 bundles	215.00 to 225.00
18-8 turnings	115.00 to 120.00
430 bundles	120.00 to 125.00

Buffalo

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	28.00 to 29.00
No. 1 busheling	33.00 to 34.00
No. 1 dealer bundles	33.00 to 34.00
No. 2 bundles	24.00 to 25.00
Machine shop turn.	16.00 to 17.00
Mixed bor. and turn.	17.00 to 18.00
Shoveling turnings	20.00 to 21.00
Cast iron borings	17.00 to 18.00
Low phos. plate	40.00 to 41.00
Structurals and plate, 2 ft and under	41.00 to 42.00
Scrap rails, random lgth.	39.00 to 40.00
Rails 2 ft and under	49.00 to 50.00
No. 1 machinery cast.	48.00 to 49.00
No. 1 cupola cast.	44.00 to 45.00

St. Louis

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	31.00 to 32.00
No. 1 dealer bundles	37.00 to 38.00
No. 2 bundles	22.00 to 23.00
Machine shop turn.	12.00 to 13.00
Shoveling turnings	14.00 to 15.00
Cast iron borings	18.00 to 19.00
No. 1 RR hvy. melting	38.00 to 39.00
Rails, random lengths	44.00 to 45.00
Rails, 18 in. and under	50.00 to 51.00
Angles and splice bars	44.00 to 45.00
RR specialties	43.00 to 44.00
Cupola cast.	50.00 to 51.00
Heavy breakable cast.	40.00 to 41.00
Cast iron brake shoes	40.00 to 41.00
Stove plate	45.00 to 46.00
Cast iron car wheels	40.00 to 41.00
Rerolling rails	54.00 to 55.00
Unstripped motor blocks	41.00 to 42.00

Birmingham

No. 1 hvy. melting	$32.50 to $33.50
No. 2 hvy. melting	25.00 to 26.00
No. 1 dealer bundles	36.00 to 37.00
No. 2 bundles	22.00 to 23.00
No. 1 busheling	36.00 to 37.00
Machine shop turn.	22.00 to 23.00
Shoveling turnings	26.00 to 27.00
Cast iron borings	14.00 to 15.00
Electric furnace bundles	36.00 to 37.00
Elec. furnace, 3 ft & under	34.00 to 35.00
Bar crops and plate	42.00 to 43.00
Structural and plate, 2 ft	41.00 to 42.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rails, random lgth.	40.00 to 41.00
Rails, 18 in. and under	48.00 to 49.00
Angles and splice bars	43.00 to 44.00
Rerolling rails	54.00 to 55.00
No. 1 cupola cast.	53.00 to 54.00
Stove plate	53.00 to 54.00
Cast iron car wheels	40.00 to 41.00
Unstripped motor blocks	40.00 to 41.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	25.00 to 26.00
No. 2 dealer bundles	18.00 to 19.00
Machine shop turnings	9.00 to 10.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	13.00 to 14.00
Clean chem. cast. borings	18.00 to 20.00
No. 1 machinery cast.	37.00 to 38.00
Mixed yard cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 prepared solids	195.00 to 200.00
18-8 turnings	85.00 to 90.00
430 prepared solids	85.00 to 90.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$33.00 to $34.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	19.50 to 20.50
No. 1 busheling	33.00 to 34.00
Drop forge flashings	32.00 to 33.00
Machine shop turn.	13.00 to 14.00
Mixed bor. and turn.	14.00 to 15.00
Shoveling turnings	15.00 to 16.00
Cast iron borings	14.00 to 15.00
Heavy breakable cast.	34.00 to 35.00
Mixed cupola cast.	43.00 to 44.00
Automotive cast.	51.00 to 52.00
Stainless	
18-8 bundles and solids	210.00 to 215.00
18-8 turnings	100.00 to 105.00
430 bundles and solids	100.00 to 105.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 dealer bundles	27.00 to 28.00
No. 2 bundles	14.00 to 15.00
No. 1 busheling	27.00 to 28.00
Machine shop turn.	10.00 to 11.00
Shoveling turnings	11.50 to 12.50
Clean cast. chem. borings	14.00 to 15.00
No. 1 machinery cast.	33.00 to 34.00
Mixed cupola cast.	33.00 to 34.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	29.00 to 30.00

San Francisco

No. 1 hvy. melting	....	$36.00
No. 2 hvy. melting	....	33.00
No. 1 dealer bundles	....	33.00
No. 2 bundles	....	22.00
Machine shop turn.	....	17.00
Cast iron borings	....	17.00
No. 1 cupola cast.	....	47.00

Los Angeles

No. 1 hvy. melting	....	$38.00
No. 2 hvy. melting	....	36.00
No. 1 dealer bundles	....	35.00
No. 2 bundles	....	18.00
Machine shop turn.	$16.00 to	17.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	18.00 to	19.00
Elec. furn. 1 ft and under (foundry)	....	49.00
No. 1 cupola cast.	....	45.00

Seattle

No. 1 hvy. melting	....	$35.00
No. 2 hvy. melting	....	33.00
No. 2 bundles	....	22.00
No. 1 cupola cast.	....	36.00
Mixed yard cast.	....	36.00

Hamilton, Ont

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$32.25
No. 2 hvy. melting	....	28.25
No. 1 dealer bundles	....	32.25
No. 2 bundles	....	22.75
Mixed steel scrap	....	24.25
Bush., new fact., prep'd.	....	32.25
Bush., new fact., unprep'd	....	26.25
Machine shop turn.	....	14.00
Short steel turn.	....	17.00
Mixed bor. and turn.	....	13.00
Rails, rerolling	....	37.00
Cast scrap	$46.50 to	48.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	....	$34.00
No. 2 hvy. melting	....	31.00
No. 2 bundles	....	20.00
Machine shop turn.	....	16.00
Shoveling turnings	....	20.00
Cut structural plate 2 ft & under	$45.00 to	46.00
Unstripped motor blocks	37.00 to	38.00
Cupola cast.	44.00 to	45.00
Heavy breakable cast.	28.00 to	29.00

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Copper Labor Outlook Eases

Both producers and users say they have enough metal to cover themselves in case of strike.

Trade says unions know this, so it will likely lead to more realistic bargaining.

Kennecott hit with antitrust suit over Okonite acquisition.

▪ If the old saying that it never rains when you carry an umbrella holds for other than just the weather, then U. S. copper companies are likely to enjoy clear labor skies.

Their basic protection is growing stocks of unsold metal, combined with strong user inventories. But practically all of the factors surrounding the relationship between copper management and labor now appear to favor management.

How imposing is the "strike protection"? You can't pin it down to pounds of copper, days, or dollars and cents. But the trade is convinced it is enough, and further, that the unions know it.

Not Much Time—One good indication of this: Kennecott Copper Co. and the International Union of Mine, Mill and Smelter Workers chatted for a few days last week, then knocked off until late this week when they will have only five days to negotiate before expiration of the contract.

Other managements and unions are talking but there has been only one report from either side on wage demands. The exception: International Machinists want 15¢ more per hour. (Best bet: They'll get about half.)

One thing is now pretty sure, says the trade. There'll be no major strikes when contracts expire June 30. Workers will be kept on the job during negotiations.

One reason for the slight hedge: Everyone wants to see how steel talks make out. While there is no direct relationship between labor in the two industries, the apparent strength of steel management seems to be helping copper management.

Favor Copper Management—Here are some other factors working in favor of the copper companies:

The Copper Institute report on May activity shows production up, sales down, and unsold stocks building.

Custom smelter sales, usually a pretty good barometer of consumer interest, have been slow lately despite a drop in price. Apparently users aren't too interested, have inventories about where they want them.

A large chunk of the membership of Mine, Mill and Smelter Workers, and other unions were off, or worked only halftime during the market sag in 1958. Financially, they are not in the best shape for a strike. But more important, psychologically, the feeling of a full paycheck adequate to support their families feels too good to stop needlessly.

Covered on Price — Commodity Exchange, Inc., New York futures market, reports trading in copper during the first half was up a resounding 344 pct over the same period last year. While very little of the 894,550 tons of metal traded will actually change hands, this means a lot of people have covered themselves against price fluctuations a strike might cause.

Copper Suit

The Justice Dept. says Kennecott Copper Co. acted to create a monopoly when it acquired The Okonite Co., independent cablemaker, last November. It asked, in a civil antitrust suit filed in Southern District Federal Court at New York City, that Kennecott divest itself of Okonite assets and customers.

Kennecott's initial reaction was negative. "Although we have not seen the complaint, we are confident we have not violated the law in the acquisition of The Okonite Co."

Initial reports said the Government would also seek to block Kennecott from acquiring any other copper producer, fabricator, or sales company.

Tin prices for the week: June 17 —104.00; June 18—104.00; June 19 — 104.00; June 22 — 103.75; June 23—103.50.*
*Estimate.

Primary Prices

(cents per lb)	current price	last price	date o change
Aluminum pig	24.70	24.00	8/1/58
Aluminum ingot	26.80	26.10	8/1/58
Copper (E)	31.50	30.00	3/9/59
Copper (CS)	31.50	32.00	6/15/59
Copper (L)	31.50	30.00	3/9/59
Lead, St. L.	11.80	11.30	5/7/59
Lead, N. Y.	12.00	11.50	5/7/59
Magnesium ingot	36.00	34.50	8/13/56
Magnesium pig	35.25	33.75	8/13/56
Nickel	74.00	64.50	12/6/56
Titanium sponge	162-182	185-205	11/3/58
Zinc, E. St. L.	11.00	11.50	2/25/59
Zinc, N. Y.	11.50	12.00	2/25/59

ALUMINUM: 99% Ingot frt allwd. COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. TIN: See above; Other primary prices, pg. 131.

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. ship pt., frt. allowed)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.032	.081	.136-.249	.250-3.
1100, 3003	45.7	43.8	42.8	43.3
5052	53.1	48.4	46.9	46.0
6061-0	50.1	45.7	43.9	44.9

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
6- 8	42.7-44.2	51.1-54.8
12-14	42.7-44.2	52.0-56.5
24-26	43.2-44.7	62.8-67.5
36-38	46.7-49.2	86.9-90.5

Screw Machine Stock—2011-T-3

Size"	¼	5/16-⅝	¾-1	1¼-1½
Price	62.0	61.2	59.7	57.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.411	$1.884	$2.353	$2.823
.024 gage	1.762	2.349	2.937	3.524

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type→ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93 3	95.7	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting) ..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	55.63	.....	52.86	55.82
Brass, Yellow	48.24	48.75	48.18	51.05
Brass, Low	51.23	51.77	51.17	54.54
Brass, R L	52.29	52.83	52.23	55.60
Brass, Naval	52.80	.....	46.61	56.21
Munts Metal	50.85	.....	46.16	.....
Comm. Bz.	53.90	54.44	53.84	56.96
Mang. Bz.	56.54	.....	50.14	.....
Phos. Bz. 5%	75.34	.....	75.84	.....

Free Cutting Brass Rod 32.73

TITANIUM

(Base prices, f.o.b. mill)

Sheet and strip, commercially pure, $7.25-$8.50; alloy, $13.40-$17.00, Plate, HR, commercially pure, $5.25-$6.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.75-$6.25; alloy, $7.75-$10.00; Bar, HR or forged, commercially pure, $4.25-$5.00; alloy, $4.25-$7.50; billets, HR, commercially pure, $3.55-$4.10; alloy, $3.55-$5.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollar per lb contained Be $74.75
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $71.50
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.30
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic basis... $ 1.31
Cobalt, 97-99% (per lb.) ... $1.75 to $1.82
Germanium, per gm, f.o.b. Miami, Okla., refined ..... 33.30 to 42.00
Gold, U. S. Treas., per troy oz. $35.00
Indium, 99.9%, dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz. ... $75 to $85
Lithium, 98% ..... $11.00 to $14.00
Magnesium sticks, 100 to 500 lb.... 59.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $240 to $242
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $18 to $20
Platinum, dollars per troy oz... $77 to $80
Rhodium ..... $120.00 to $125.00
Silver ingots (¢ per troy oz.) 91.375
Thorium, per kg. $43.00
Vanadium ..... $ 3.45
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
- No. 115 ..... 30.25
- No. 120 ..... 29.00
- No. 123 ..... 28.00

80-10-10 ingot
- No. 305 ..... 34.50
- No. 315 ..... 32.50

88-10-2 ingot
- No. 210 ..... 43.50
- No. 215 ..... 39.25
- No. 245 ..... 35.00

Yellow ingot
- No. 405 ..... 24.75

Manganese bronze
- No. 421 ..... 27.75

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
- 0.30 copper max. 24.75-25.00
- 0.60 copper max. 24.50-24.75

Piston alloys (No. 122 type).. 24.25-25.25
No. 12 alum. (No. 2 grade)... 21.50-22.00
108 alloy 22.00-22.50
195 alloy 25.00-26.00
13 alloy (0.60 copper max.)... 24.25-24.75
AXS-679 (1 pct zinc) 21.75-22.25

(Effective June 22, 1959)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-97½% 22.50-23.50
Grade 2—92-95% 21.25-22.25
Grade 3—90-92% 20.25-21.25
Grade 4—85-90% 17.50-18.50

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	27½	26¾
Yellow brass	20⅝	18¾
Red brass	24¼	23½
Comm. bronze	25⅛	24⅜
Mang. bronze	19⅛	18⅜
Free cutting rod ends.	20½	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26½
No. 2 copper wire	25
Light copper	23¾
*Refinery brass	24½
Copper bearing material	23¾

*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire	26½
No. 2 copper wire	25
Light copper	23¾
No. 1 composition	21
No. 1 comp. turnings	20½
Hvy. yellow brass solids	16
Brass pipe	16½
Radiators	17
Aluminum	
Mixed old cast.	13½—14½
Mixed new clips	16 —17
Mixed turnings, dry	14 —15

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire	24¼—24¾
No. 2 copper wire	22¼—22¾
Light copper	20¼—20¾
Auto radiators (unsweated)	14 —14½
No. 1 composition	18¼—18¾
No. 1 composition turnings	16¾—17¼
Cocks and faucets	14¼—14¾
Clean heavy yellow brass	12¾—13
Brass pipe	14¼—14¾
New soft brass clippings	15¼—15¾
No. 1 brass rod turnings	12½—13

Aluminum

Alum. pistons and struts	7 — 7½
Aluminum crankcase	10¾—11¼
1100 (2s) aluminum clippings	14½—15
Old sheet and utensils	10¾—11¼
Borings and turnings	6½— 7
Industrial castings	10¾—11¼
2020 (24S) clippings	12 —12½

Zinc

New zinc clippings	4¾— 5¼
Old zinc	3¼— 3½
Zinc routings	2 — 2¼
Old die cast scrap	1¾— 2

Nickel and Monel

Pure nickel clippings	52-54
Clean nickel turnings	37-40
Nickel anodes	52-54
Nickel rod ends	52-54
New Monel clippings	30-32
Clean Monel turnings	30-32
Old sheet Monel	26-28
Nickel silver clippings, mixed	18
Nickel silver turnings, mixed	15

Lead

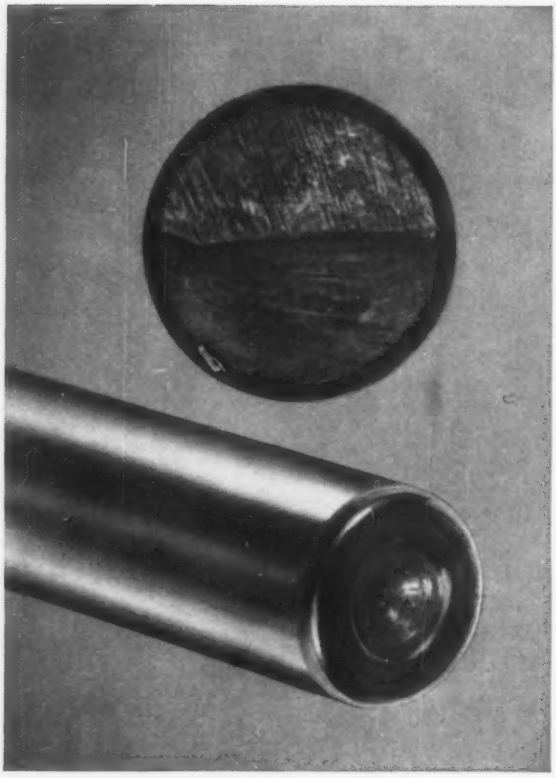
Soft scrap lead	7 — 7¼
Battery plates (dry)	2 — 2¼
Batteries, acid free	1⅞— 2⅛

Miscellaneous

Block tin	77 —78
No. 1 pewter	59 —60
Auto babbitt	40 —41
Mixer common babbitt	9½—10
Solder joints	13¼—13¾
Siphon tops	42
Small foundry type	9½—10
Monotype	9½—10
Lino. and stereotype	8½— 9
Electrotype	7 — 7½
Hand picked type shells	5¼— 5¾
Lino. and stereo. dross	2¼— 2¾
Electro dross	2¼— 2¾

You benefit seven ways from Republic Steel Bar

SERVICE IN DEPTH



COLD DRAWN CARBON CORRECTED BARS HELP BRIGGS & STRATTON BOOST PISTON PIN PRODUCTION. The company was experiencing production difficulties and was not satisfied with piston pin quality from a performance standpoint. On the advice of a Republic Field Metallurgist, Briggs & Stratton switched to Republic C-1050 Cold Drawn Carbon Corrected Bars. The results were immediate. Production increased substantially. Rejects dropped to a minimum. Pin quality maintained at the highest level. Other advantages of Cold Drawn Carbon Corrected Bars include: Better machinability. Savings in both metal and money by eliminating waste. No need to buy bars oversize to allow for decarb removal. Photo shows finished piston pin used in Briggs & Stratton 1¾ to 3 hp engines. Note induction hardening in cutaway view.

Steel bar service in depth is an exclusive Republic concept, designed to help you solve steel bar problems and to benefit you these seven ways:

1. Facilities—Republic bar mills are strategically located in relation to major use areas. Hot rolled mills at Cleveland, Youngstown, Buffalo, Massillon, Chicago, Canton, Gadsden; cold finished mills at Massillon, Hammond, Beaver Falls, Hartford, and Los Angeles.

2. Abilities—Republic's broad and specialized experience has been gained as the nation's number one producer of alloy and carbon bars, and leader in the production of special quality steels, such as forging bars.

3. Shapes and Sizes—Modern bar mills produce a complete range of sizes and materials—carbon, alloy, stainless, and titanium—in ¼″ to 10″ rounds, also squares, hexagons, octagons, flats, and special sections.

4. Variety—In addition to regular merchant quality, production includes coil spring and spring bar quality, cold heading and cold extrusion quality, high quality alloy and carbon steel bar products in heavier weight coils.

5. Quality—Republic combines quality control at every step of production with the most advanced features of bar mill design to meet today's exacting requirements for high quality steel bar products.

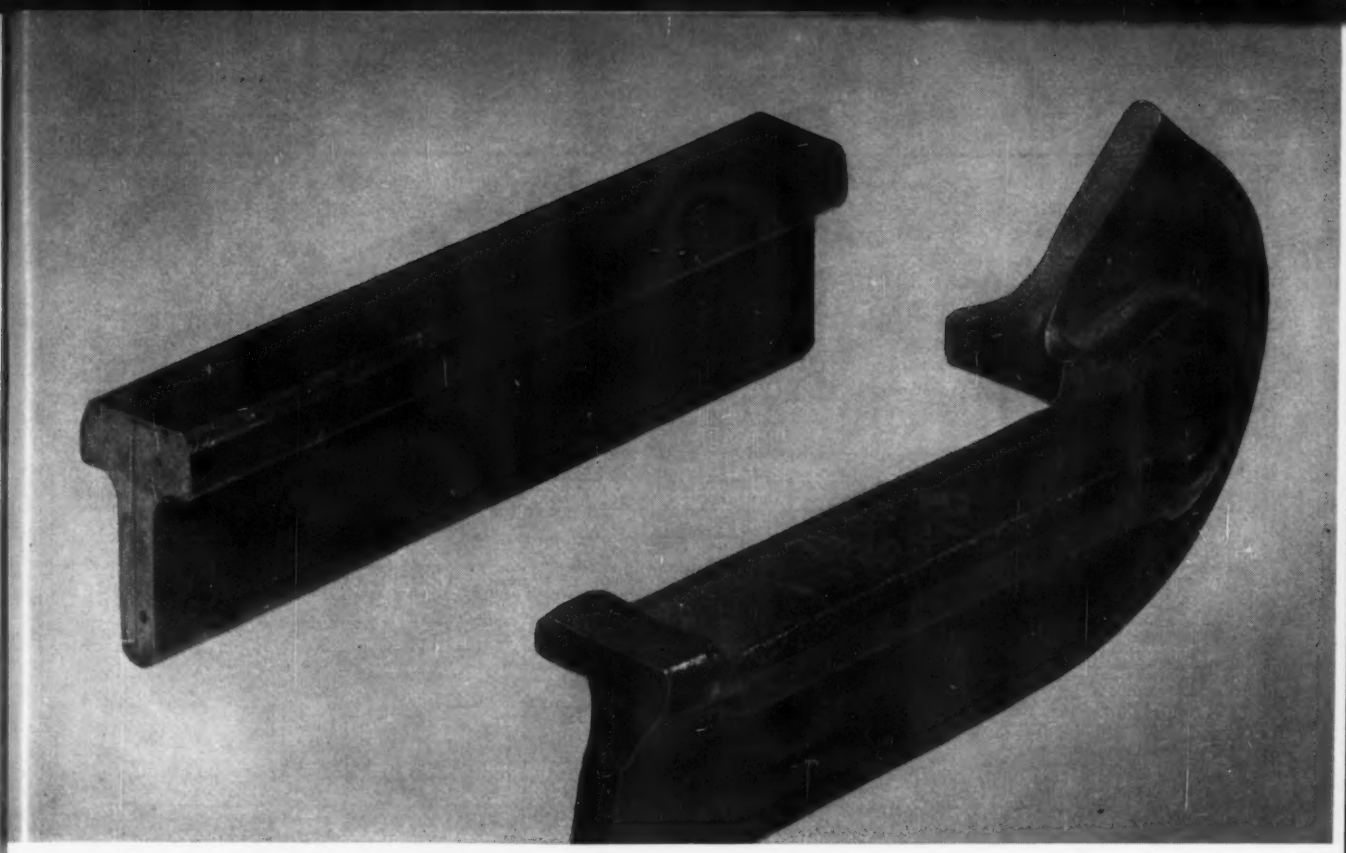
6. Dependability—Republic's aim has been to build capacity to provide more steel tonnage for existing customers as well as supply additional users. Assurances of steel to customers are real assurances. Orders are not taken by Republic unless capacity is available to fill them.

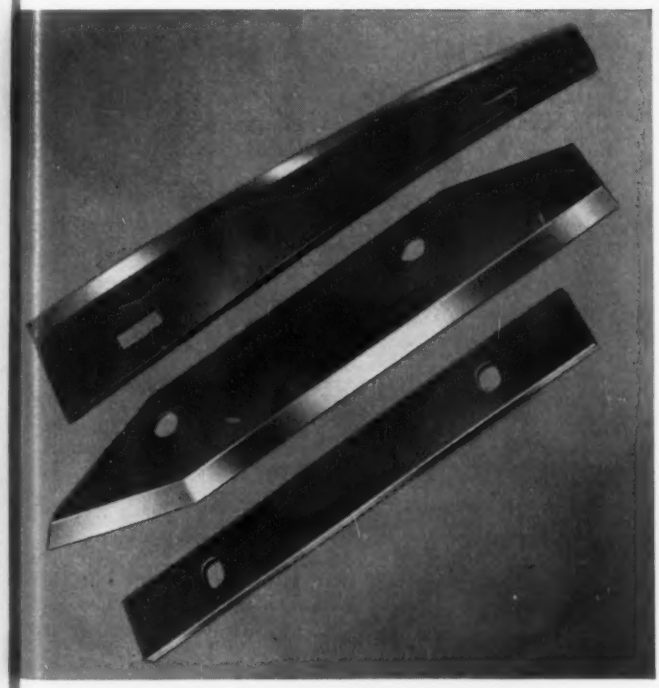
7. Metallurgical Service—Republic's famed 3-Dimension Metallurgical Service Teams—field, mill, and laboratory—are always available to help your personnel apply Republic's high quality bar products to your product. Carbon, alloy, stainless, and titanium metallurgists will assist in the selection, application, and processing of the right bar product for the job. No obligation. The coupon is your invitation to use this service.

Here are three examples of steel bar *service in depth.*

REPUBLIC

World's Widest Range of Standard Steels





REPUBLIC HOT ROLLED SPECIAL SECTION REDUCES COST on this rail anchor through elimination of most machining and forming operations. The special section is preformed to the predominating cross section of the part. If you design or produce steel parts you will be interested in these advantages of Republic Special Sections: (1) Almost limitless flexibility in design. (2) One-piece shapes replace costly assemblies. (3) Simplification of built-up, interlocking or associated parts. Republic Special Sections are available hot rolled or cold drawn in carbon, alloy, titanium, and stainless steel. Send coupon for full facts.

3-D METALLURGICAL SERVICE HELPS AGRICULTURAL KNIFE MANUFACTURER SLASH PRODUCTION COSTS. Lund Products Company, Maynard, Massachusetts, produces cutting knives for agricultural equipment. A quality product, Lund wanted to make them better to withstand even the most severe abuse. Republic metallurgists offered advice on practices and procedures in working alloy steels. The result? A superior cutting knife, produced at a substantial reduction in cost. 3-D Service is available to all steel users without obligation. Clip and mail coupon.

STEEL

and Steel Products

REPUBLIC STEEL

REPUBLIC STEEL CORPORATION
DEPT. IA -7700
1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

Have a metallurgist call: ☐ Carbon ☐ Alloy ☐ Stainless
Send more information on:
☐ Cold Drawn Special Sections ☐ Carbon Corrected Bars
☐ Alloy Steel Bars

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3, R3*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Bridgeport, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3,* $114.00 *T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8*	7.575 *W8*		8.40 *W8, S9,I3*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1,P11*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport, Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3,B4* 7.525 *E3*			8.40 *S9*	15.55 *S9*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *F3*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*			6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, Ala. City, Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

(Effective June 22, 1959)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled *18* ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str Low Alloy C.R	Hi Str Low Alloy Galv		Coke* *1.25*-lb. base box	Electro** *0.25*-lb. base box	Holloware Enameling *29* ga.
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35¢ from 1.25-lb. coke base box price, 0.75 lb. 0.25 lb. add 55¢. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25¢. **ELECTRO: 0.50-lb. add 25¢; 0.75-lb. add 65¢; 1.00-lb. add $1.00. Differential 1.00 lb./0.25 lb. add 65¢.		
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*			$10.50 *U1*	$9.20 *U1*	
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*			7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	
	Worcester, Mass.									6.70 *A5*			
	Trenton, N. J.												
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*						
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3,W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A1*	6.275 *A1*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3,Y1*	6.275 *U1, I3,Y1*	6.875 *U1, I3*	6.775 *U1, I3,Y1*	7.225 *U1*	7.525 *U1, Y1,I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1,Y1*	7.85 *U1, Y1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*	6.875 *G2*							$9.20 *G2*	7.95 *G2*
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1**, *R3*	7.525 *R3, S1*	9.275 *R3,*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Donora, Aliquippa, McKeesport, Pa.	5.10 *U1, J3,P6*	6.275 *U1, J3,P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3,P6*	$10.40 *W5, J3*	$9.10 *U1, J3*	7.85 *U1, J3*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3,W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	7.85 *W5*
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*	7.50 *J3**	6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2,R3*	$10.50 *T2*	$9.20 *T2*	
	Houston, Texas									6.65 *S2*			

*Electrogalvanized sheets.

(Effective June 22, 1959)

*7.425 at Sharon-Niles is 7.225

IRON AGE

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *C4*		7.50 *C4*	7.95 *C4*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Fairless, Pa.	5.825 *U1*	5.825 *U1*		6.875 *U1*							
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3* 6.475 *T5*	9.025 *R3,R2* 8.775 *T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,13*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8,B5* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5* 9.225 *B5,P3, P8*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*					5.30 *N4*				8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Weirton, Wheeling, Follansbee, W. Va.							5.30 *W5*				
	Youngstown, Ohio	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, S12*	8.625 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				8.675 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*				8.675 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.675 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas	5.925 *S2*	5.925 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective June 22, 1959) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brook Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C4 Claymont Products Dept., Claymont, Del.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M6 Mystic Iron Works, Everett, Mass.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co., Carnegie, Pa.
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Steel Corp., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

PIPE AND TUBING — **Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.**

	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½–3 In.		2 In.		2½ In.		3 In.		3½–4 In.	
STANDARD T. & C.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Youngstown *R3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fontana *K1*	+10.75	+26.00	+7.75	+22.00	+4.25	+17.50	+1.75	+16.75	+1.25	+15.75	+0.75	+15.25	0.75	+15.50								
Pittsburgh *J3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Alton, Ill. *L1*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Sharon *M3*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Fairless *N2*	0.25	+15.0	3.25	+11.0	6.75	+6.50	9.25	+5.75	9.75	+4.75	10.25	+4.25	11.75	+4.50								
Pittsburgh *N1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Wheeling *W5*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Wheatland *W4*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50								
Youngstown *Y1*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
Indiana Harbor *Y1*	1.25	+14.0	4.25	+10.0	7.75	+5.50	10.25	+4.75	10.75	+3.75	11.25	+3.25	12.75	+3.50								
Lorain *N2*	2.25	+13.0	5.25	+9.0	8.75	+4.50	11.25	+3.75	11.75	+2.75	12.25	+2.25	13.75	+2.50	+12.25	+27.25	+5.75	+22.50	+3.25	+20.0	+1.75	+18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Youngstown *R3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Fontana *K1*	+6.25		+2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Alton, Ill. *L1*	4.75	+9.0	8.75	+5.0	11.75	+0.50	12.25	+1.75	12.75	+0.75	13.25	+0.25	13.75	+1.50								
Sharon *M3*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Wheeling *W5*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50
Indiana Harbor *Y1*	5.75	+8.0	9.75	+4.0	12.75	0.50	13.25	+0.75	13.75	0.25	14.25	0.75	14.75	+0.50								
Lorain *N2*	6.75	+7.0	10.75	+3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	+10.75	+24.75	+3.25	+19.0	+0.75	+16.50	4.25	+11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts. East St. Louis zinc price now 11.00¢ per lb.

(Effective June 22, 1959)

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

CLAD STEEL

Base prices, cents per lb f.o.b.

	Cladding	Plate (*L4, C4, A3, J2*) 10 pct	Plate (*L4, C4, A3, J2*) 15 pct	Plate (*L4, C4, A3, J2*) 20 pct	Sheet (*I2*) 20 pct
Stainless Type	302	.....	.....	.....	37.50
	304	28.80	31.55	34.30	40.00
	316	42.20	46.25	50.25	58.75
	321	34.50	37.75	41.05	47.25
	347	40.80	44.65	48.55	57.00
	405	24.60	26.90	29.25	.....
	410	22.70	24.85	27.00	.....
	430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.15; 1 side, 36.20.

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *P5*	.....	.....	.....	.....	.....	14.75
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

COKE

	Net-Ton
Furnace, beehive (f.o.b.) Connellsville, Pa.	$14.50 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Detroit f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearney, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	34.35
Erie, Pa., f.o.b.	32.00
Cleveland, del'd	34.19
Cincinnati, del'd	32.84
St. Paul, f.o.b.	31.25
St. Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1959 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Cold-Reduced (Coiled or Cut Length) Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor	.....	12.475	.....
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30	.....	.....
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa (*J3*); Beech Bottom (*W5*); Brackenridge (*A3*); Granite City (*G2*); Indiana Harbor (*I3*); Mansfield (*E2*); Newport, Ky. (*A9*); Niles, O. (*S1*); Vandergrift (*U1*); Warren, O. (*R3*); Zanesville, Butler (*A7*).

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100,110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.	$185.00
High duty (except Salina, Pa., add $5.00)	140.00
Medium duty	125.00
Low duty (except Salina, Pa., add $2.00)	103.00
Ground fire clay, net ton, bulk	22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$158.00
Childs, Hays, Latrobe, Pa.	163.00
Chicago District	168.00
Western Utah	183.00
California	165.00
Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O., Morrisville	163.00-168.00
Silica cement, net ton, bulk, Latrobe	29.75
Silica cement, net ton, bulk, Chicago	26.75
Silica cement, net ton, bulk, Ensley, Ala.	27.75
Silica cement, net ton, bulk, Mt. Union	25.75
Silica cement, net ton, bulk, Utah and Calif.	39.00

Chrome Brick

Per net ton

Standard chemically bonded, Balt.	$109.00
Standard chemically bonded, Curtiner, Calif.	119.00
Burned, Balt.	103.00

Magnesite Brick

Standard, Baltimore	$140.00
Chemically bonded, Baltimore	119.00

Grain Magnesite

St. ⅜ to ½-in. grains

Domestic, f.o.b. Baltimore in bulk.	$73.00
Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk	46.00
in sacks	52.00-54.00

Dead Burned Dolomite

Per net ton

F.o.b. bulk, producing points in:	
Pa., W. Va., Ohio	$16.75
Missouri Valley	15.60
Midwest	17.00

(Effective June 22, 1959)

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard Q Coated Nails Col	Woven Wire Fence Col	"T" Fence Posts Col	Single Loop Bale Ties Col	Galv. Barbed and Twisted Barbless Wire Col	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	.....	.....	190	9.00	9.675
Atlanta *A8***	175	192	.....	214	198	8.75	9.425
Bartonville *K2***	175	192	178	214	198	9.10	9.775
Buffalo *W6*	.....	.....	.....	.....	.....	9.00	9.55*
Chicago *N4***	177	190	172	212	196	9.00	9.70
Chicago *R3*	.....	.....	.....	.....	.....	9.00	9.55
Cleveland *A6*	.....	.....	.....	.....	.....	.....	.....
Cleveland *A5*	.....	.....	.....	.....	.....	9.00	.....
Crawfordsv. *M4***	175	192	...	214	198	9.10	9.775
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	...	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	.....	.....	.....	.....	.....	.....
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	17.	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo *C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	.....	.....	.....	.....	.....	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Monessen *P6*	.....	.....	.....	.....	193	8.65	9.325
Palmer, Mass. *W6*	.....	.....	.....	.....	.....	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	.....	.....	213	9.60	10.15
Rankin, Pa. *A5*	173	187	.....	.....	193	9.00	9.55
So. Chicago *R3*	173	187	.....	.....	193	8.65	9.20
S. San Fran. *C6*	.....	.....	.....	236	.....	9.95	10.50†
SparrowsPt. *B3***	175	.....	.....	214	198	9.10	9.775
Struthers, O. *Y1**	.....	.....	.....	.....	.....	8.65	9.20
Worcester *A5*	179	.....	.....	.....	.....	9.30	9.85
Williamsport *S5*	.....	.....	.....	.....	.....	.....	.....

* Zinc less than .10¢. *** .10¢ zinc.
** 11-12¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	.....	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.80	16.10	19.30
Indianapolis *R5*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *D1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Wallingford *W1*	9.40	10.70	12.90	15.90	18.55
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
Babcock & Wilcox	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
National Tube	2	13	40.28	47.21	35.22
	2½	12	54.23	63.57	47.43
	3	12	62.62	73.40	54.77
	3½	11	73.11	85.70	63.93
	4	10	97.08	113.80	85.53
Pittsburgh Steel	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

METAL POWDERS

Cents per lb, minimum truckload, delivered E. of Miss. River, unless otherwise noted.

Iron Powders

Compacting Powders

Electrolytic, imported, f.o.b.	29.50 to 33.00
Electrolytic, domestic	34.50
Sponge	11.25
Atomized	11.25
Hydrogen Reduced	11.25 to 12.00
Carbonyl	88.00
Welding Powders*	8.10
Cutting and Scarfing Powders*	9.10

Copper Powders

Electrolytic, domestic	41.00
Precipitated	40.50 to 45.00
Atomized	39.80 to 48.30
Hydrogen reduced, f.o.b.	43.25
Bronze	47.20 to 51.50
Chromium, electrolytic	$5.00
Lead	19.00
Manganese, f.o.b.	42.00
Molybdenum	$3.60 to $3.95
Nickel	$1.05 to $1.03
Nickel Silver	53.50
Nickel Steel	13.00
Solder	13¢ plus metal value
Stainless Steel, 302	$1.07
Stainless Steel, 316	$1.26
Steel, atomized, prealloyed, 4600 series	14.00 plus metal value
Tin	14¢ plus metal value
Titanium, 99.25+%, per lb., f.o.b.	$11.25
Tungsten	$3.15 (nominal)

* F.O.B., shipping point.

BOLTS, NUTS, RIVETS, SCREWS

(Base discount, f.o.b. mill)

Pct. Discounts

Bolts	1-4 Containers	5 Containers	20,000 Lb.	40,000 Lb.
Machine				
½" and smaller x 3" and shorter	55	57	61	62
⅝" diam. x 3" and shorter	47	49½	54	55
¾" thru 1" diam x 6" and shorter	37	39½	45	46
¾" thru 1" diam. longer than 6" and 1¼" and larger x all lengths	31	34	40	41
Rolled thread, ½" and smaller x 3" and shorter	55	57	61	62
Carriage, lag, plow, tap, blank, step, elevator and fitting up bolts ½" and smaller x 6" and shorter	48	50½	55	56

Note: Add 25 pct for less than container quantity. Distributor prices are 5 pct less on bolts and square nuts.

Nuts, Hex, HP reg. & hvy.	Full case or Keg price
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
C. P. Hex, reg. & hvy.	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½
Hot Galv. Hex Nuts (All Types)	
¾ in. and smaller	41
Semi-finished Hex Nuts	
¾ in. or smaller	62
⅞ in. to 1½ in. inclusive	56
1⅝ in. and larger	51½

(Add 25 pct for broken case or keg quantities)

Finished	
⅞ in. and smaller	65

Rivets	*Base per 100 lb*
½ in. and larger	$12.85
	Pct. Off List
7/16 in. and smaller	15

Cap Screws *Discount (Packages)*

Full Finished H. C. Heat Treat

New std. hex head, packaged	Full Case
⅝" diam. and smaller x 6" and shorter	54
¾", ⅞", and 1" diam. x 6" and shorter	38
⅝" diam. and smaller x longer than 6"	..
¾", ⅞", and 1" diam. x longer than 6"	..

	C-1018 Steel Full-Finished Cartons	Bulk
¼" through ⅝" dia. x 6" and shorter	59	48
¾" through 1" dia. x 6" and shorter	45	32

Minimum quantity—¼" through ⅝" diam., 15,000 pieces; 7/16" through ⅝" diam., 5,000 pieces; ¾" through 1" diam., 2,000 pieces.

Machine Screws & Stove Bolts

Plain Finish	Discount Mach. Screws	Stove Bolts
Cartons	60	60
Bulk		
Quantity		
To ¼" diam. incl. 25,000-and over	60	..
5/16 to ½" diam. incl. 15,000-200,000	60	..

Machine Screws & Stove Bolt Nuts

	Discount Hex	Square
In Cartons	16	19
Quantity		
In Bulk ⅜" diam. & smaller 25,000-and over	15	16

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper	
Rolled elliptical, 18 in. or longer, 5000 lb lots	46.00
Electrodeposited	38.00
Brass, 80-20, ball anodes, 2000 lb or more	51.50
Zinc, ball anodes, 2000 lb lots (for elliptical add 1¢ per lb)	18.00
Nickel, 99 pct plus, rolled carton, 5000 lb	1.0225
(Rolled depolarized add 3¢ per lb)	
Cadmium	1.20
Tin, ball anodes $1.05 per lb (approx.).	

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum	65.90
Copper sulphate, 100 lb bags, per cwt.	22.75
Nickel salts, single, 100 lb bags	36.00
Nickel chloride, freight allowed, 100 lb	45.00
Sodium cyanide, domestic, f.o.b. N. Y., 200 lb drums	23.70
(Philadelphia price 24.00)	
Zinc cyanide, 100 lb	60.75
Potassium cyanide, 100 lb drum N. Y.	45.50
Chromic acid, flake type, 10,000 lb or more	30.44

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.5
Chicago	140.9
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

STEEL SERVICE CENTERS

Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets: Hot-Rolled (18 ga. & hvr.)	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)††	Strip: Hot-Rolled	Plates	Shapes: Standard Structural	Bars: Hot-Rolled (merchant)	Bars: Cold-Finished	Alloy Bars: Hot-Rolled 4615 As rolled	Alloy Bars: Hot-Rolled 4140 Annealed	Alloy Bars: Cold-Drawn 4615 As rolled	Alloy Bars: Cold-Drawn 4140 Annealed
Atlanta		8.59	9.87	10.13	8.91	9.29	9.40	9.39	13.24*	.....	.....	.....	.....
Baltimore	$.10	8.65	9.35	9.09	9.15	9.10	9.65	9.55	11.80*	16.28	15.28	19.82	19.08
Birmingham		8.18	9.45	10.46	8.51	8.89	9.00	8.99	.....	.....	.....	.....	.....
Boston**	.10	10.22[1]	11.27[2]	12.07[3]	12.17[4]	10.42[5]	10.72[6]	10.34[7]	13.45*	16.79	15.79	20.29	19.54
Buffalo	.15	8.55	9.75	11.00	8.90	9.35	9.40	9.30	11.60*	16.34	15.55	19.01	19.30
Chicago**	.15	8.39[1]	9.60	11.05	10.35[4]	8.62[5]	9.16[6]	8.78[7]	9.30	16.20	15.20	19.70	18.95
Cincinnati	.15	8.58	9.66	11.10	8.98	9.42	9.71	9.46	11.68*	16.52	15.52	20.02	19.27
Cleveland**	.15	8.32[1]	9.61[2]	11.16[3]	10.36[4]	8.76[5]	9.63[6]	9.36[7]	11.40*	16.31	15.31	19.81	19.06
Denver	.20	9.60	11.84	12.94	9.63	9.96	10.04	10.00	11.19	.	.	....	20.84
Detroit	.15	8.66	9.86	11.40	9.03	9.41	9.71	9.45	9.66	15.46	15.48	18.81	19.23
Houston		8.10	8.60	.....	8.15	8.45	8.05	8.10	11.60	16.20	15.25	19.65	18.95
Kansas City	.15	9.02	10.27	11.37	9.33	9.71	9.82	9.81	10.22	16.87	15.87	20.37	19.62
Los Angeles		8.70[8]	11.20 11.80	12.20	9.15	9.10	9.00	9.10	12.95	17.30	16.35	21.30	20.60
Memphis	.15	8.55	9.80	.....	8.60	8.93	9.01	8.97	12.11*	.....	.....	.....	.....
Milwaukee	.15	8.53[1]	9.74	11.19	10.49[4]	8.76[5]	9.50[6]	8.93[7]	9.54	16.34	15.34	19.84	19.09
New York	.10	9.27	10.59	11.40	9.74	9.87	9.84	10.09	13.35*	16.16	15.60	20.10	19.35
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia	.10	8.30	9.35	10.71	9.35	9.25	9.20	9.50	12.85*	16.58	15.58	20.08	19.33
Pittsburgh**	.15	8.32[1]	9.61[2]	10.95[3]	10.36[4]	8.52[5]	9.24[6]	8.62[7]	11.40*	16.20	15.20	19.70	18.95
Portland		10.80	11.75	13.30	11.95	11.50	11.10	9.85	15.30*	18.50	17.45	20.75	20.25
San Francisco	.10	9.75	11.20[9]	11.50	9.85	10.10	9.95	10.25	13.70	17.05	16.35	21.05	20.60
Seattle		10.30	11.55	12.50	10.25	10.10	10.20	10.50	14.70	17.15	16.80	20.65	20.60
Spokane	.15	10.45	11.70	10.90	10.65	10.25	10.35	11.15	14.85	17.75	16.95	21.55	20.75
St. Louis	.15	8.78	9.98	11.43	9.04	9.42	9.63	9.52	9.93	16.58	15.58	20.08	19.33
St. Paul	.15	8.94	10.19	11.64	8.99	9.45	9.53	9.70	10.16	.....	15.41	.....	19.21

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** Prices based on 2000 lb item quantities except for galv. sheet, c-f and alloy bars.

†† 10¢ zinc. ‡ Deduct for country delivery. * C1018—1 in. rounds. [1] 10 ga. x 36 x 96 —120; [2] 20 ga. x 36 x 96 —120; [3] 10 ga. x 36 —120; [4] ¼" x 1"; [5] ¼" x 84"; [6] I-Beams 6 x 12.5; [7] Rounds—¾-2 15/16"; [8] 15 ga. & heavier; [9] 14 ga. & lighter.

(Effective June 22, 1959)

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	.....
Birmingham *R3*	62.00	62.50*	.....	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	.....
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Everett *M6*	67.50	68.00	68.50	.....	.....
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	.....
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Add $1.00 for 0.31-0.69 pct phos.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4* (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $103.50; (15.51-16.00), $106.50. Add $1.00 per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 18 pct. Add $1.25 for each 0.50 pct manganese over 1.00 pct. Bessemer silvery pig iron (under .10 pct phos.): $64.00. Add $1.00 premium for all grades silvery to 18 pct.

† Intermediate low phos.

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	28.00	31.50	29.00	32.75	33.25	34.50	51.25	41.50	48.25	—	22.25	—	22.50
Billets, forging	—	37.75	38.75	39.50	42.50	42.00	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	49.50	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25 31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	44.25	69.25	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	55.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	47.00	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R3.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown. *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7;* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6;* Gary, *U1,* (25¢ per lb. higher).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8.*

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3,* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet. *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

(Effective June 22, 1959)

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ERIE ORANGE PEEL GRAPPLES

Strong closing action. Picks up anything it can get its blades around. All-welded high-carbon steel construction means low-cost performance for a long time.

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- **High Wear-Resistant Alloy Sheaves**
- **Recessed Alemite Grease Fittings**
- **3 and 4-Blade Models**
- **¼ to 4 cu. yds.**

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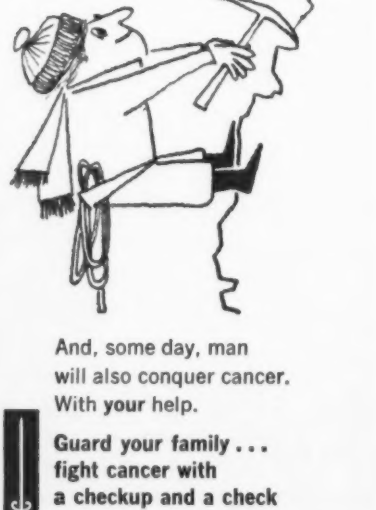

And, some day, man will also conquer cancer. With your help.

Guard your family . . . fight cancer with a checkup and a check

AMERICAN CANCER SOCIETY

FERROALLOY PRICES

Ferrochrome

Cents per lb contained Cr, lump, bulk, carloads, del'd. 67-71% Cr, .30-1.00% max. Si.

0.02% C....	41.00	0.50% C....	38.00
0.05% C....	39.00	1.00% C....	37.75
0.10% C....	38.50	1.50% C....	37.50
0.20% C....	38.25	2.00% C....	37.25

4.00-4.50% C, 60-70% Cr, 1-2% Si.. 28.75
3.50-5.00% C, 57-64% Cr, 2.00-4.50% Si 28.25
0.025% C (Simplex) 36.75
8% max C, 50-55% Cr, 6% max Si. 25.75
4½% max C, 50-55% Cr, 2% max Si 26.50

High Nitrogen Ferrochrome

Low-carbon type 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome max. 0.10% C price schedule.

Chromium Metal

Per lb chromium, contained, packed, delivered, ton lots, 97.25% min. Cr, 1% max. Fe.
0.10% max. C $1.29
9 to 11% C, 88-91% Cr, 0.75% Fe... 1.38

Electrolytic Chromium Metal

Per lb of metal 2" x D plate (⅛" thick) delivered packed, 99.80% min. Cr. (Metallic Base) Fe 0.20 max.
Carloads $1.15
Ton lots 1.17
Less ton lots 1.19

Low Carbon Ferrochrome Silicon

(Cr 39-41%, Si 42-45%, C 0.05% max.) Carloads, delivered, lump, 3-in. x down, packed.
Price is sum of contained Cr and contained Si.

	Cr	Si
Carloads, bulk	28.25	14.60
Ton lots	33.50	16.05
Less ton lots	35.10	17.70

Calcium-Silicon

Per lb of alloy, lump, delivered, packed. 30-33% Cr, 60-65% Si, 3.00 max. Fe.
Carloads, bulk 24.00
Ton lots 27.95
Less ton lots 29.45

Calcium-Manganese—Silicon

Cents per lb of alloy, lump, delivered, packed.
16-20% Ca, 14-18% Mn, 53-59% Si.
Carloads, bulk 23.00
Ton lots 26.15
Less ton lots 27.15

SMZ

Cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe ½ in. x 12 mesh.
Ton lots 21.15
Less ton lots 22.40

V Foundry Alloy

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, V-5; 38-42% Cr, 17-19% Si, 8-11% Mn, packed.
Carload lots 18.45
Ton lots 19.95
Less ton lots 21.20

Graphidox No. 4

Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis, Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.
Carload packed 19.20
Ton lots to carload packed 21.15
Less ton lots 22.40

Ferromanganese

Maximum base price, f.o.b., lump size, base content 74 to 76 pct Mn.

Producing Point	Cents per-lb
Marietta, Ashtabula, O.; Alloy, W. Va.; Sheffield, Ala.; Portland, Ore.	12.25
Johnstown, Pa.	12.25
Neville Island, Pa.	12.25
Sheridan, Pa.	12.25
Philo, Ohio	12.25
S. Duquesne	12.25

Add or substract 0.1¢ for each 1 pct Mn above or below base content.
Briquets, delivered, 66 pct Mn:
Carloads, bulk 14.80
Ton lots packed in bags 17.20

Spiegeleisen

Per gross ton, lump, f.o.b. Palmerton, Pa., and Neville Island, Pa.

Manganese	Silicon	
16 to 19%	3% max.	$100.50
19 to 21%	3% max.	102.50
21 to 23%	3% max.	105.00

Manganese Metal

2 in. x down, cents per pound of metal delivered.
95.50% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.
Carload, packed 45.75
Ton lots 47.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, f.o.b. Marietta, O., delivered, cents per pound.
Carloads 34.00
Ton lots 36.00
250 to 1999 lb 38.00
Premium for Hydrogen - removed metal 0.75

Medium Carbon Ferromanganese

Mn 80 to 85%, C 1.25 to 1.50, Si 1.50% max., carloads, lump, bulk, delivered, per lb of contained Mn 25.50

Low-Carb Ferromanganese

Cents per pound Mn contained, lump size, packed, del'd Mn 85-90%.

	Carloads	Ton	Less
0.07% max. C, 0.06% (Bulk) P, 90% Mn	37.15	39.95	41.15
0.07% max. C	35.10	37.90	39.10
0.10% max. C	34.35	37.15	38.35
0.15% max. C	33.60	36.40	37.60
0.30% max. C	32.10	34.90	36.10
0.50% max. C	31.60	34.40	35.60
0.75% max. C, 80.85% Mn, 5.0-7.0% Si ...	28.60	31.40	32.60

Silicomanganese

Lump size, cents per pound of metal, 65-68% Mn, 18-20% Si, 1.5% max. C for 2% max. C, deduct 0.2¢ f.o.b. shipping point.
Carloads bulk 12.80
Ton lots, packed 14.45
Carloads, bulk, delivered, per lb of briquet 15.10
Briquets, packed pallets, 3000 lb up to carloads 16.30

Silvery Iron (electric furnace)

Si 15.50 to 16.00 pct., f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $106.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $93.00.

Silicon Metal

Cents per pound contained Si, lump size, delivered, packed.

	Ton lots,	Carloads,
98.25% Si, 0.50% Fe..	24.95	23.65
98% Si, 1.0% Fe	24.45	23.15

Silicon Briquets

Cents per pound of briquets, bulk, delivered, 40% Si, 2 lb Si, briquets.
Carloads, bulk 8.00
Ton lots, packed 10.80

Electric Ferrosilicon

Cents per lb contained Si, lump, bulk, carloads, f.o.b. shipping point.

50% Si....	14.60	75% Si....	16.90
65% Si....	15.75	85% Si....	18.60
	90% Si....	20.00	

Ferrovanadium

50-55% V delivered, per pound, contained V, in any quantity.

Openhearth	3.20
Crucible	3.30
High speed steel	3.40

Calcium Metal

Eastern zone, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
100 to 1999 lb..	2.40	3.30	4.55

(Effective June 22, 1959)

Alsifer, 20% Al, 40% Si, 40% Fe, f.o.b. Suspension Bridge, N. Y., per lb.
Carloads, bulk ..... 9.85¢
Ton lots ..... 11.20¢

Calcium molybdate, 43.6-46.6% f.o.b. Langeloth, Pa., per pound contained Mo $1.50

Ferrocolumbium, 50-60% lb, 2 in. x D, delivered per pound contained Cb.
Ton lots $3.90
Less ton lots..... 3.95

Ferro-tantalum-columbium, 20% Ta, 40% Cb, 0.30% C, del'd ton lots, 2-in. x D per lb con't Cb plus Ta $3.40

Ferromolybdenum, 55-75%, 200-lb containers, f.o.b. Langeloth, Pa., per pound contained Mo.. $1.76

Ferrophosphorus, electric, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $5.00 unitage, per gross ton $120.00
10 tons to less carload $131.00

Ferrotitanium, 40% regular grade 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.35

Ferrotitanium, 25% low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Cambridge, O., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots $1.54

Ferrotitanium, 15 to 18% high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $240.00

Ferrotungsten, ¼ x down packed, per pounds contained W, ton lots delivered ..... $2.15 (nominal)

Molybdic oxide, briquets per lb contained Mo, f.o.b. Langeloth, Pa. $1.49
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.38

Simanal, 20% Si, 20% Mn, 20% Al, f.o.b. Philo, Ohio, freight allowed per lb.
Carload, bulk lump ..... 18.50¢
Ton lots, packed lump ..... 20.50¢
Less ton lots ..... 21.00¢

Vanadium oxide, 86-89% V_2O_5 per pound contained V_2O_5 .... $1.38

Zirconium silicon, per lb of alloy 35-40% del'd, carloads, bulk.. 26.25¢
12-15%, del'd lump, bulk-carloads ..... 9.25¢

Boron Agents

Borosil, per lb of alloy del. f.o.b. Philo, Ohio, freight allowed, B 3-4%, Si 40-45%, per lb contained B
2000 lb carload $5.50

Bortram, f.o.b. Niagara Falls.
Ton lots per pound ..... 45¢
Less ton lots, per pound ..... 50¢

Corbortam, Ti 15-21%, B 1-2%, Si 2-4%, Al 1-2%, C 4-5-7.5%, f.o.b., Suspension Bridge, N. Y., freight allowed.
Ton lots per pound ..... 14.00¢

Ferroboron, 17.50 min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D, ton lots... $1.20
F.o.b. Wash., Pa., Niagara Falls, N. Y., delivered 100 lb up
10 to 14% B ..... .85
14 to 19% 1.20
19% min. B 1.50

Grainal, f.o.b. Cambridge, O., freight, allowed, 100 lb and over
No. 1 ..... $1.05
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 17.50% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd.
Ton lots (packed) $1.46
Less ton lots (packed) 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, del'd less ton lots 2.15

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RAILWAY CARS
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REBUILT — GUARANTEED ELECTRICAL EQUIPMENT

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Qu.	H.P.	Make	Type	Volts	R.P.M.
2**	3000	Whse.	Rev.	600	600
1**	2200	Whse.	Vent.	600	92/132
4**	1500	Whse.	Rev.	600	600
4**	700	Whse.	Vent.	250	300/700
2**	645	S.&S.	Rev.	300	1000
2	600	Al.Ch.	Mill	600	300/600
1	600	Whse.	Mill	250	110/220

SLIP RING MOTORS
3 Phase—60 Cycle

Qu.	H.P.	Make	Type	Volts	R.P.M.
1	2500	Al.Ch.	Mill	2200	296
1	1800	Whse.	Mill	2300	252
3	1500	G.E.	Mill	6600/4160-V.	444
1	1000	Whse.	C.W.	2300	441
1	500	Ideal	S-4-20	4800	708
1	500	G.E.	MT-410	2200	585
1	500	Al.Ch.	ANY	2200	505
1	500	Al.Ch.	ANY	2200	293
1	400	Al.Ch.	ANY	2200	505
1	400	Whse.	C.W.	2200	290
1	350	G.E.	1-15-M	2200	1180
1	350	G.E.	MT-412	2200	450
1	300	Whse.	CW-1012	2200	704
1	300	G.E.	1-15B-M	440	1200

SYNCHRONOUS MOTORS
3 Phase—60 Cycle

Qu.	H.P.	Make	Volts	R.P.M.
1	5600	Whse.	4760	1200
2	1400	Whse.	4160	450
1	960	G.E.	460	300
1	700	El.Mchy.	440	200
1	500	El.Mchy.	2300	720
1	450	Whse.	220	128
1	300	G.E.	2200	600
1	200	Whse.	440	600

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Fair Sales Weather In New York

A seasonal pickup in construction boosted used tool sales in New York.

The rest of the market is taking the cue and starting to look better.

▪ Warm weather has brought new bloom to used machinery sales around New York. May volume was highly satisfactory. The trend continues in June.

Biggest factor has been the seasonal pick-up in construction. Fabricating equipment — rolls, shears, brakes and ironworkers are moving briskly as structural and sheet metal shops hurry to meet contract dates.

One dealer points out the many smaller shops in this area must wait until orders are in hand before buying tools. But once the shop is sure of its business, machinery buying goes through quickly.

Construction impetus extends to contractors' products as well as actual buildings themselves. Windows, doors, heating and ventilating equipment—makers of all of these are affected. And they have been buying tools at a gratifying rate.

Dept. of Commerce's estimate that business outlays for new plant and equipment would hit $32.6 billion this year was cheering news. This would be 7 pct better than capital spending in 1958.

Price Is Right—Happily for buyers, prices are attractive. "We're buying tools for less money and selling them cheaper," reports one dealer. Main exceptions, not too surprisingly, are very late models and specialized equipment.

Area metalworking generally has picked up well. The small appliance firms, well represented here, are working at high capacity, and their demand for equipment is steady if not spectacular. Defense industries have improved, a boon to the host of subcontractors.

Expansion Plans—Most promising of all is the scheduled growth of plant expansion. Many firms are taking the brakes off capital equipment buying plans, shelved during the 1958 slump. As these programs gain momentum, dealers anticipate really substantial orders.

Despite the agitation about tight money, this does not appear to be a real handicap to machinery sales. Buyers generally have the money to pay for the tools they want. "The trick is to get them to part with it," comments one dealer. But most appear convinced they can replace the cash from profits or secure credit without too much difficulty. The tendency to hold onto cash, so prevalent a few months ago, seems to be fading.

Good Supply Picture—Generally, machines are in good supply. Dealers can deliver most popular tools without too much difficulty. Cranes, however, continue to be a much-wanted line, particularly in medium and heavy-duty capacities. Much of this demand is traceable directly to construction, but it also reflects an overall need for heavier equipment. In fact, light-duty machinery of almost any kind is increasingly hard to move, area dealers report.

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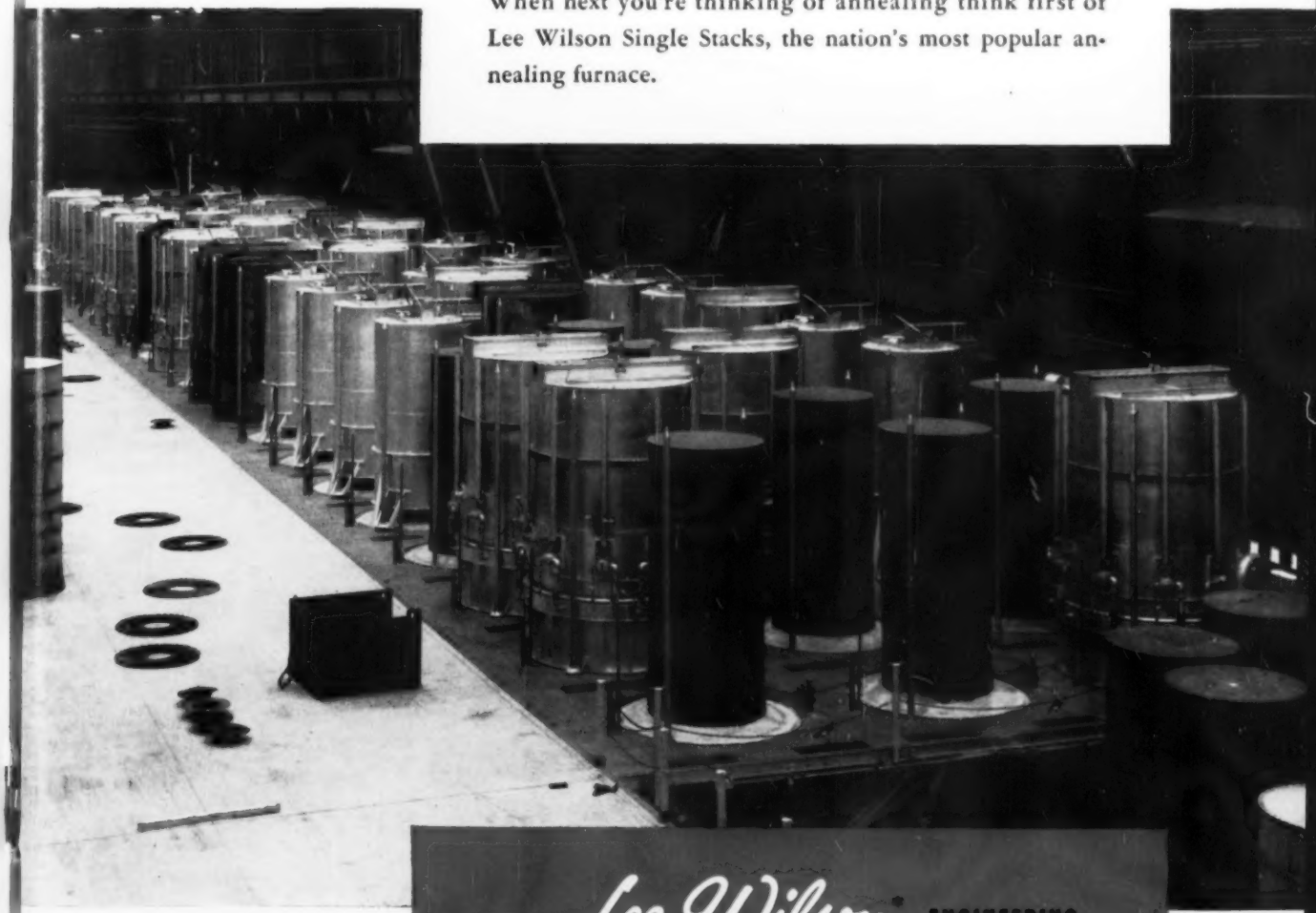
Progressive Producer Has Industry's Largest Single Stack Annealing Furnace Installation

When McLouth Steel recently put their 47th Lee Wilson Single Stack Furnace "on stream" they set into operation the industry's largest Single Stack operation.

But more important, this gives McLouth one of the most accurate, most versatile high production annealing departments in the world. For only Lee Wilson's exclusive "O" tube—high convection design distributes the heat with exacting uniformity. And, by heating the stacks individually, each charge can be individually controlled for greatest flexibility.

The installation, made over the past four years, is of 60" diameter furnaces with 162" piling heights.

When next you're thinking of annealing think first of Lee Wilson Single Stacks, the nation's most popular annealing furnace.



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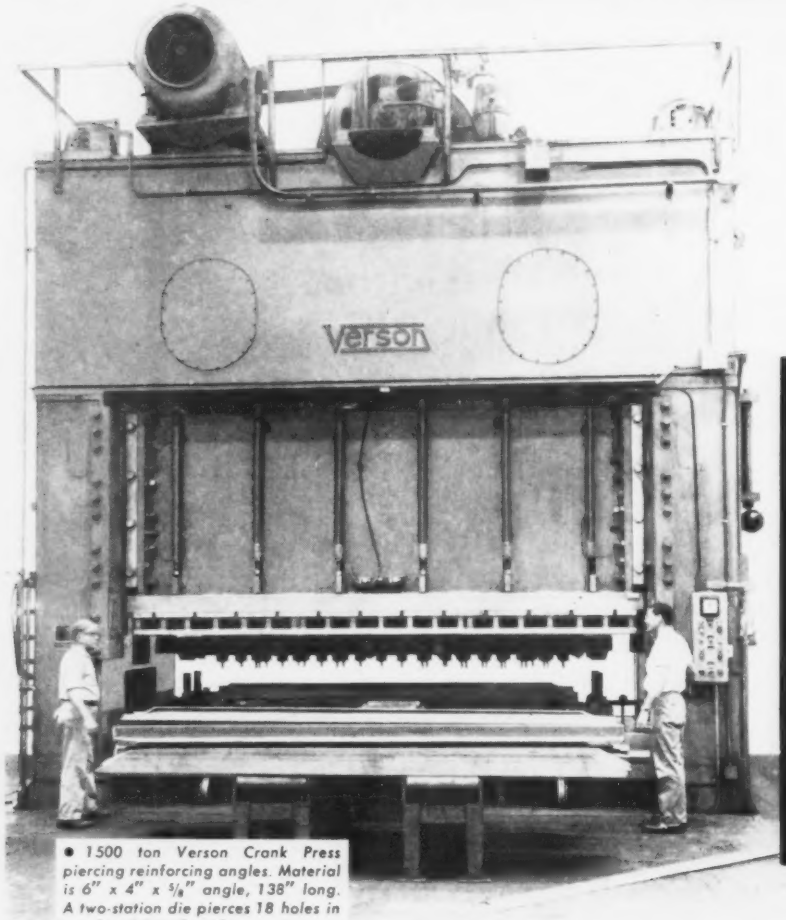

• *1500 ton Verson Crank Press piercing reinforcing angles. Material is 6" x 4" x 5/8" angle, 138" long. A two-station die pierces 18 holes in one leg, 14 in the other.*

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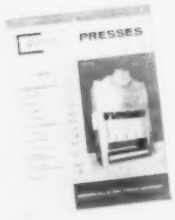

Descriptive bulletins are available on all Verson equipment. Write mentioning the type of equipment you are interested in.

While most people think of press versatility in connection with smaller presses, you can get versatility in big presses if you need it. You can get it, that is, if the press builder understands your production problems.

The Verson 1500 ton double crank press shown above is a good example. Installed in the Decatur (Ill.) plant of Caterpillar Tractor Co., it's a big press (bolster area 72" x 192", over 31' high, and weighing more than 180 tons). It operates at 16 strokes per minute. It is designed to J.I.C. specifications and features Verson Automatic Cascade lubrication to all points of the press. It is used for blanking and piercing on a wide variety of construction equipment parts, with as many as four operations performed simultaneously.

Most important, though, it fits the production processes of the plant in which it is used. And we at Verson believe the process is more important than the press.

If you would like to see what production-consciousness can mean to you, ask your Verson representative to go over your requirements with you. It could be the first step to bigger profits.

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224-C

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